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# ANNALS OF OPHTHALMOLOGY

A QUARTERLY JOURNAL AND REVIEW OF  
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FOUNDED BY JAMES PLEASANT PARKER.

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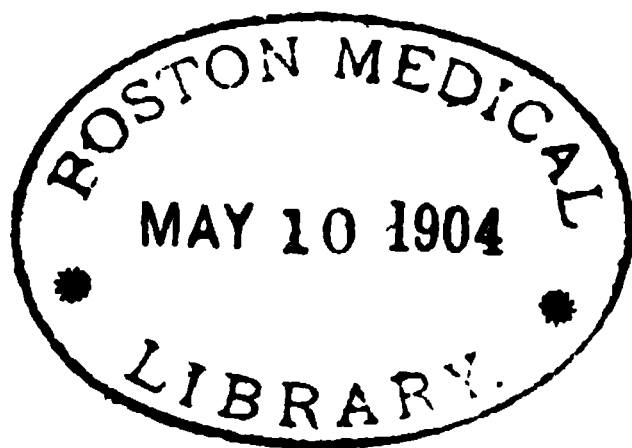
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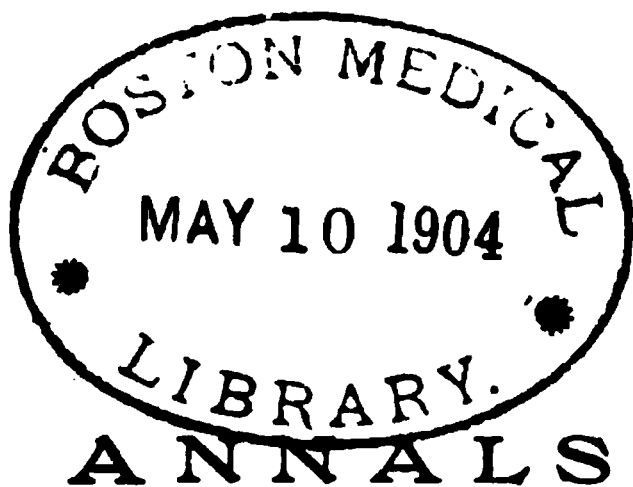
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**DE WECKER'S CAPSULAR ADVANCEMENT  
OPERATION.\***

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GEON TO THE WILLS EYE HOSPITAL.**

While in attendance at De Wecker's clinic in Paris several years ago, I had an opportunity of observing this celebrated ophthalmologist perform his capsular advancement operation in a large number of cases, and being impressed by the excellent results obtained by him, I determined to employ the operation in my practice whenever suitable opportunity should offer. I have accordingly, during the past six years practiced the operation in a number of instances, and sufficient time having elapsed to judge of the permanency of its effect, I thought it would be of interest to make a study of my cases and to report the results so obtained to the Section, with the view of calling the attention of the Fellows to an operative procedure, which I think is splendidly adapted to correct quite a large number of cases of muscular insufficiency, but which for some reason seems to have been but little practiced by the ophthalmologists of this city.

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\* Read at the Ophthalmological Section of the College of Physicians, of Philadelphia, December 20, 1898.

As the name of the operation indicates, it has for its object the advancement of the muscle, not by changing its insertion directly, but indirectly, by sliding nearer to the cornea the entire fibrinous expansion of the tendon of the muscle upon the capsule of the globe.

The steps in the operation as described by De Wecker are as follows:—The conjunctiva being grasped lightly with forceps slightly to the corneal side of the insertion of the muscle which is to be advanced, an upward incision is made into the conjunctiva parallel with the corneal limbus and attaining the height of the upper edge of the cornea and a similar one is made below which reaches to the level of the lower margin of the cornea. After any bleeding has been controlled, a small buttonhole is made in the capsule of Tenon above and below, and a little externally to the insertion of the muscle into the globe. The closed points of the scissors are then inserted into one of these holes and passed under the muscle in all directions to free the capsule from its sublying tissue.

These preliminary steps having been performed, a delicate curved needle is passed through the episcleral tissues at the summit of the cornea, and then carried through the buttonhole in the capsule, under the capsule for several millimeters, and then finally brought out through the conjunctiva and its sublying tissues near the canthus. A similar suture is then passed below from the base of the cornea through the lower buttonhole, the eye is rotated with forceps in the direction of the muscle which is being advanced, and the ends of the sutures carefully tied.

De Wecker claims for this operation the power to accomplish all that is gained by a direct advancement of the insertion of the muscle itself, without the risk of interfering with the axis of the traction of the muscle. The operation in my hands, however, has not shown such a wide range of usefulness, for I have never been able to obtain but a moderate degree of permanent advancing power from it. While the sutures are in position, I have frequently gained 50 degrees, but this has always rapidly decreased after the stitches were removed, so that at the lapse of two years, I find by consulting my notes that in thirty-three cases of varying degrees of insufficiency of convergence which I

had subjected to this operation, I had gained on an average of but six degrees.

Of these thirty-three cases, five were exotropias of low degree, and in three of these a tenotomy was performed upon the antagonistic muscle at the same time. The twenty-eight remaining cases were instances of exophoria, ranging from six to twenty-five degrees, uncomplicated by any gross deviation in the vertical muscles. Although when measured in prism diopters, at the lapse of two years, the benefit which the patient received from the operation seems but trifling, the improvement in the symptoms was, however, very great, and whilst objectively but little was gained, subjectively, the results show that the operation was justified. The sensation of the eye rolling out which was frequently complained of, was controlled, and the sense of constriction about the forehead, and the diplopia which had manifested itself in reading, disappeared.

It has been urged against the operation that its cosmetic effect is bad, as it leaves small ridges in the conjunctiva over the insertion of the muscle. This is partially true, for such a fold of conjunctiva is present for some months after the operation, but in none of my cases has it proven at all disfiguring at the end of a year, and after several years had elapsed it would require a trained eye in most instances to detect any change in the condition of the globe. In any event, the deformity is always less than that which is seen after the muscular advancement operation, and subsides much more quickly.

I have never advanced the capsule of any muscle but the internal rectus. As stated here a month ago, I think that errors of low degree in the vertical muscles are best corrected by prisms, those of high degree by tenotomy. In esotropia, tenotomy of the internus seems to restore the equilibrium quite satisfactorily in the majority of the cases, and in extreme cases where free tenotomies of both internal recti fail to accomplish this, nothing short of an advancement of the muscle itself will suffice. I have accordingly limited the operation to cases of divergent strabismus of slight degree, and to cases of exophoria of not more than twenty-five degrees, when I had reason to suppose that the muscular defect is structural and not wholly innervational.



In many other cases, however, this procedure will not suffice, and relief will not be obtained until a better balance is obtained by operative measures. It is in this class of cases that the capsular advancement operation seems to be particularly indicated. In cases of low degree of exotropia also, when the vision in the deviating eye is low and binocular vision hard to obtain, I have on several occasions, by advancing the capsule of both interni, succeeded in attaining parellism of the visual axes, and have retained the condition of equilibrium by persistent prismatic exercises.

One great advantage which is claimed for this operation over both the tenotomy and the muscular advancement operation, is the nicety with which its effects may be measured. While this is true so far as the immediate results are concerned, as I have mentioned above, there is such a rapid deviation of the eye toward its original position after the stitches are removed, even though they have been permitted to remain in position for a week or more, that it is impossible to do more than approximate what the ultimate effect will be, although as my statistics would show, this will probably diminish the total amount of exophoria about six degrees.

When performed with proper antiseptic precautions, the operation is free from danger, and I have never seen but slight reaction follow it. It is my practice to perform the operation either in a hospital or at the home of the patient, and I always insist upon the prompt and continuous application of ice compresses for the first forty-eight hours.

LYMPHOMA OF EYELIDS. TREATMENT: 1. OPERATION. 2. THE INTERNAL ADMINISTRATION OF ARSENIC.

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For thirty years there have been cases reported from time to time in ophthalmological literature, of a new growth in the orbit or lids which consisted pathologically of a pure round cell structure, and clinically was marked by rapid growth, very often accompanied by similar new growths in the nose or pharynx. Such cases have been considered to be lymphomata or lympho-sarcomata by different writers, but from the descriptions have undoubtedly been the same condition. That it is not a common affection is evidenced by the fact that the total number of cases reported is quite small.

It so happens that I have seen two cases within a year which belong to this group, and I think it of interest to report them here, more especially as one of them which returned after repeated operations was finally cured by the internal administration of arsenic.

The first case was a gentleman 66 years of age, who came on Oct. 20, 1896, complaining of an increasing difficulty in opening his right eye. In fact he could not at the time I first saw him, lift the upper lid above the centre of the cornea when looking straight forward. He said the difficulty had been more or less present for a year, but of late had rapidly increased. Upon examination a new growth was found in the lid occupying the situation of the so called tarsal cartilage, and was about three-quarters of an inch in length and half an inch in breadth. The skin moved freely over the growth. Upon

everting the lid, which was done with great difficulty, shaggy, villous-like projections were found on the conjunctival surface of a pale violet color, and bearing a certain resemblance to irregular trachomatous nodules. When these masses were touched with a probe it readily punctured them and went through what appeared to be a firm tissue into the soft structure of the tumor. The gentleman reported that three months before Dr. A. T. Cabot had removed a tonsil which had become greatly enlarged. As I was in some doubt as to the nature of the pathological condition present, I removed one of the nodules from the conjunctival surface, and sent it to Dr. E. Wyllys Taylor for a pathological examination, and wrote Dr. Cabot asking for information as to the condition found in the tonsil. Dr. Cabot replied that the microscopical examination showed that the growth was made up of small lymphoid cells, and was regarded by Dr. Wm. F. Whitney as a lympho-sarcoma.

Dr. Taylor, to whom the nodule from the conjunctiva was submitted, reported that "one edge of the specimen submitted is normal conjunctiva which becomes rather suddenly pathological, a tissue of new formation evidently taking the place of the conjunctiva and destroying it. The newly formed tissue is made up chiefly of round (lymphoid) cells in great numbers. The cells are arranged in no definite way as regards their relation to a connective tissue stroma and the growth is therefore not to be regarded as a tumor in the ordinary sense in which that word is used. There are no leucocytes in this new formed tissue: it does not therefore represent an acute inflammatory process."

Upon the receipt of these reports I operated upon the lid under cocain anesthesia through an incision in the upper lid. The growth was found to be a soft friable structure, as far as I could determine macroscopically, not encapsulated, and of a gray-violet color. On account of its softness and great friability it was removed with considerable difficulty. The wound healed kindly. The entire tumor was removed and has not returned.

The second case was a woman 63 years of age, who came on April 2, 1897, reporting that there had been a

swelling at the site of each tear sac slowly increasing in size for five or six years; that for the past year hard swellings had been coming in each lower lid, and also of late in the upper lid of the right eye, until now she could not open the right eye to its usual width. Upon palpation the swellings at the sites of the tear sacs were found to be very firm and had the feel of bony structure. The tumors in the lids were of firm consistency, and occupied the whole of the lower lids. They were rounded on their anterior surface, and projected markedly outward, as will be seen in the photograph taken at this time (Fig. 1.). The skin was freely movable over them. The growth in the upper lid was flatter and about half an inch long by approximately a quarter of an inch wide. The bases of these tumors as seen through the conjunctiva, which was perfectly smooth and glistening, were of a violet color.

On the 7th of April I operated on the growth in the lower lid of the right eye under cocain anesthesia. The growth proved to be larger than I had anticipated, and to extend further back over the edge of the orbit than I had been led to expect by the external examination. It consisted of the same soft, gelatinous, friable material that I had found in the previous case, and was so intimately attached to the conjunctiva that to remove it without taking away the conjunctiva also was very difficult. The wound healed quickly, and it was then discovered that a small portion of the growth, about the size of split pea, remained at one end of the incision. On June 25th I operated on the lower lid of the left eye. The conditions and difficulties were the same as in the other operation, and in order to get all of the tumor an incision of considerable length was necessary. This was closed with five sutures. The wound healed quickly and the patient was discharged from the hospital on July 2d. Microscopically the structure was found to be of a uniform character, made up of great numbers of round cells, deposited in a fine connective tissue meshwork, and was considered a simple lymphoma, although some gentlemen who saw the slides were inclined to call it a lympho-sarcoma.

The patient was next seen by me on the first of Sept., 1897. Then the small bit of new growth left in the lower lid of the right eye at the first operation had greatly

increased in size. The tumor in the upper lid had also markedly increased, and was an inch in length, over half an inch in width, and so thick that the growth mechanically prevented the raising of the lid, and the patient was obliged to tip the head backward in order to see with that eye. The growth had also appeared in the upper lid of the left eye. I sent the patient to Dr. J. L. Goodale for an examination of the nose and pharynx, and he reported as follows:

“Mrs. B. Oct. 9, 1897. Examined nose and throat. Nose: Left turbinates not remarkable except for slight hypertrophy. R. lower turbinate markedly hypertrophic, with cicatrix anteriorly, and adhesion to septum in middle portion, causing nearly complete occlusion. No evidence of new growth in nose from anterior inspection. Posteriorly: pharyngeal vault bears several rounded, sharply elevated, closely aggregated growths, from the size of a millet seed to that of a pea, with the general aspect of adenoid tissue.

“Pharynx: Behind the right posterior pillar is a rounded growth the size of a pea, firm, with smooth pinkish surface, suggested a greatly enlarged follicle. Right tonsil bi-lobed, left, single lobed; both larger than normal in view of patient's age. Crypts not dilated.

“On the lingual tonsil are conspicuous sharply elevated masses, from the size of a millet seed to that of a pea. Larynx normal.”

On October 29th I operated upon the upper lid of the right eye, and found the same structure and experienced the same difficulties in the operation that I had encountered in operating on the two lower lids. Upon healing the growth quickly reappeared in several nodules, and I again operated to remove them on November 23d. Again on December 7th I operated to remove the growth in the lower lid of the right eye; but all these operations were of no permanent avail, as by the last of December the growth had returned in the upper lid of the right eye, the lower lid of the right eye, and was also rapidly increasing in the upper lid of the left eye; moreover, the dense hard swellings over the site of each tear sac also began to increase. The condition in the pharynx also became much worse and so obstructed the air passages that the patient could not sleep lying down, and it became neces-

Fig. 1.

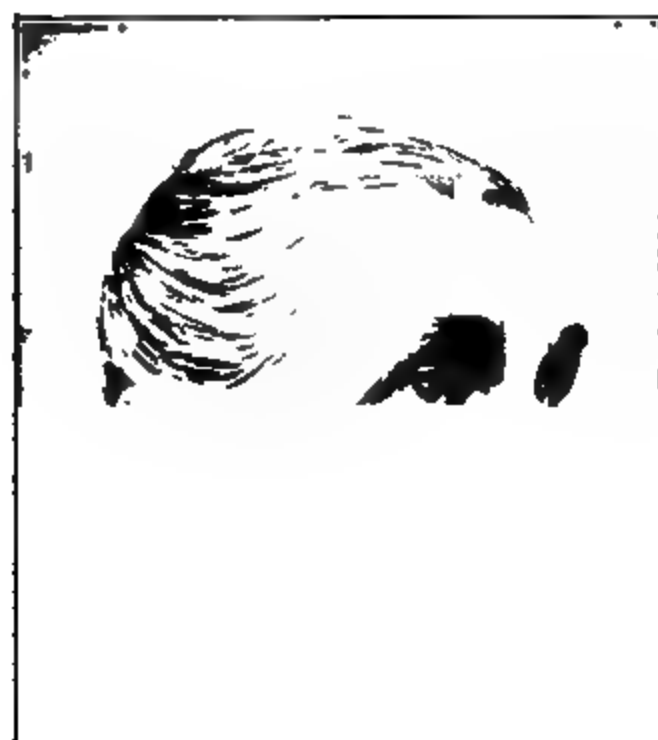


Fig. 2.





sary to bolster her up in bed to almost a sitting position in order that she might sleep without distress. Luckily at this time Dr. W. D. Hall called my attention to an article by Bronner in Transactions of the VII International Ophthalmic Congress, in which he reported a case of lymphoma of the eyelids as cured by the internal administration of arsenic. I immediately ordered five drops of liquor potassii arsenitis, to be given three times a day, to be increased a drop every other day, until a maximum of ten drops three times a day was attained, and to be continued at that dose. The tumors continued to increase for a month after the Fowler's solution was given, but at the end of thirty days a note was made that the tumors were diminishing in size, and twenty days later the diminution was noted as nearly one-half, and also that the patient could open her eyes moderately well. From this time on the recovery was uninterrupted. The growth in the lids absolutely disappeared. The bone like tuberosities over the tear sacs softened and finally disappeared. The trouble in the pharynx cleared up in the same remarkable manner, and the patient could sleep lying down. When last seen by me, about the first of July, she had taken no arsenic for about three months and there was not the slightest trace of any return of the disease, as the accompanying photograph (Fig. 2.) will show. I regret that I have no photograph of the case as it appeared when the administration of the arsenic was begun.

## A CASE OF FATAL HEMORRHAGE FROM THE CONJUNCTIVA\*

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Mrs. G., aged 25, American, primipara, was confined in the maternity ward of the Fall River Hospital on March 5, 1898. The labor was short and easy. The child was born just before the arrival of the attending physician. The membranes protruded from the vagina before they ruptured. The child was born at the moment of rupture, at about 8 p. m. It was at full term but small, weighing but five pounds. While washing it immediately, the nurse noticed that the upper lid of the left eye appeared red and swollen. After a few hours it was so much swollen that the lid everted spontaneously when she tried to open the eye.

The next morning a thin straw-colored discharge was noticed, and at 9 a. m. a drop of arg. nitr. solution was put into each eye by the matron. Before this was done the lid of the right eye had begun to look red and swollen. By mistake a 6 per cent. solution of silver was used instead of 2 per cent. as intended. At 11 a. m. there was a bloody oozing from o. s. At 3 p. m. a steady trickling of blood began and continued. At 4 p. m. bleeding from o. d. began. The attending physician, Dr. Thompson, saw the infant and prescribed borax lotions. The hemorrhage continued during the night, and in the morning he referred the case to me. I saw it 37 hours after birth. There was then a steady oozing from both eyes, which was increased in amount by any manipulation. The lids of both eyes were very prominent. There was no edema and but a very slight heightening of the normal color of the skin. Upon everting the upper lid of o. s., which was about four times the normal thickness, there appeared a dark purple, rough, adherent mass, which involved the whole palpebral conjunctiva. Blood oozed from every part of it. Some of the clots attached to the mass, which looked like a rat-eaten slough, could be wiped off with a swab, but this increased the hemorrhage. The lower lid presented a similar condition. The bulbar conjunctiva and cornea were normal. In o. d. everything was

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\*Presented to the Fall River Medical Society, Oct. 12, 1898.

normal except the upper lid which was exactly like that of the other eye. The eye was cleansed with boric acid and tightly bandaged. This controlled the hemorrhage to a slight extent but the dressing soaked by evening when it was renewed. At this time the lower lid of the right eye which had been normal in the morning showed a dark, rat-eaten conjunctiva over the middle half of its surface. At 10 p. m. the infant nursed and went to sleep. At midnight the nurse found it dead. There had been no increase in the amount of bleeding, but it had not ceased. Post mortem, the mass which lined the lids was easily torn off with a probe, leaving a beautiful clean dissection of the Meibomian glands. The mass by treatment under water was found to be mostly blood clot in the subconjunctival tissue. The conjunctiva itself was three times its normal thickness and lay about four-fifths of the way between the Meibomian glands and the surface. Rubbing off the clot, which was thus seen to be on both sides of the conjunctiva, that membrane appeared smooth. In the retrotarsal folds it was dark in color and thickened. There was a small subconjunctival ecchymosis above the cornea of the left eye. Elsewhere the sclera and cornea were normal. A part of the conjunctiva was sent to the Harvard University Laboratory for microscopic examination. The report was that there was nothing distinctive.

Death evidently occurred in this case from exhaustion from loss of blood. The total amount of hemorrhage cannot be accurately estimated, but it was enough to account for the result in a child that weighed only five pounds. In seeking for the cause of the bleeding several questions arise, some of which cannot be settled positively. Was the infant a hemophile? Perhaps so. There was no hemorrhage from any other mucous surface. The mother could recall no case of bleeding in the immediate family on either side. She herself had no post-partum hemorrhage. Was there ophthalmia neonatorum? This may be answered in the negative, for something wrong was noticed by the nurse within half an hour after, not simply birth, but rupture of the membranes. It is probable that in the few cases where ophthalmia seems to be congenital the membrane had been ruptured sometime earlier, allowing infection to take place. Also the pathological condition was localized, and after death there was no sign of a general conjunctivitis. What part did the silver nitrate play in the final outcome? Unfortunately, the original condition of the eye cannot be determined, but there was present a thin slightly colored discharge and marked swelling before any application was made.

The strength of the silver solution though greater than was intended was not more than is generally used in diseased conditions, and in this instance no harm was done to the cornea. The course of events seems to be about as follows: there was an exuding of blood into and beneath the conjunctiva which gradually escaped outward through that membrane. The epithelial slough caused by the silver allowed a free bleeding from the whole surface—a capillary oozing. Hemophilia was probably the underlying cause.

There have been reported but few cases of severe conjunctival hemorrhage. Stöwer (*Deutsche med. Wochenschr.* '95, No. 6.) saw severe bleeding from the conjunctiva of the upper lid of an infant of seven months. A new growth with a granular surface was found under the lid, which was supposed to be a granuloma developing from a chalazion. Jessop (*Trans. Ophth. Soc. Un. K. XV.*, p. 64.) had repeated severe hemorrhages in a woman of 27 which were caused by slight nævoid changes in the lid. Collapse followed, but the bleeding was stopped by clamp and cautery. He mentions three recorded cases. These five cases had distinct anatomical causes and are not to be classed with our case. Shirley (*N. Y. Med. Journ.*, Jan. 2, 1892.) relates that he had occasion to scarify freely the conjunctiva of an apparently healthy negro of two weeks for muco-purulent conjunctivitis, and that the hemorrhage that ensued went on, in spite of all efforts to control it, to a fatal issue. Nettleship (*Dis. of Eye.*) once saw hemorrhage continuing for some time, without apparent cause, from the conjunctiva of the lid, in a child recovering from purulent ophthalmia. Pomeroy (*N. Y. Med. Rec.*, Aug. 20, 1897.) saw an infant whose mother had dangerous post-partum hemorrhage. Sol. arg. nit, 2 per cent. was used in the eyes one day after birth. In twelve hours there was a sero-sanguinolent discharge which in twenty-four hours became wholly bloody, with a slow persistent oozing startling to observe. Compression and ice would not control it. Finally rubber was bound on tight for thirty-six hours and then replaced for twenty-four hours more. The child finally died. De Schweinitz (*Med. Rec.*, April 18, 1891.) reports a case where 2 per cent. solution of nitrate of silver was applied to the heal-

thy conjunctiva of a negro child at birth, followed in three hours by a 4 per cent. solution, and boracic acid. In twelve hours a bloody oozing set in, which gradually increased and formed a firm clot. When the clot was removed the blood was seen to come from numerous points. It ceased on the third day. There was no hemophilic history.

The last two cases are similar in some respects to the one now reported.

# LENSES FOR THE TREATMENT OF AMBLYOPIA.

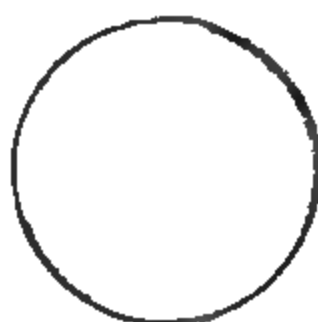
BY NORBURNE B. JENKINS, M. D.,

KNOXVILLE, TENN.

Below is illustrated a number of lenses for the development of the function of the retina in those forms of amblyopia in which the ophthalmoscopic appearances are normal.

1

2



3

4

5

6



7

8



The types of amblyopia which may be successfully treated with these lenses are *amblyopia ex anopsia*, "congenital amblyopia," and the amblyopia as described in the *Medical Record*, vol. LIV, pages 528 and 645. The last is probably the most prevalent form of amblyopia. It attacks all ages, developing to its maximum degree usually in presbyopes, while in earlier life the impairment of vision is generally slight. Often it develops rapidly and unnoticed.

The chief obstacle encountered in the successful treatment of these amblyopias is the correct estimation of errors of refraction, something which heretofore has been seldom obtained, except in simple hyperopia of low degree, or in simple myopia. Should the refraction of either eye be imperfect, the return to or the development of normal vision will be greatly retarded. Without the proper correction any improvement of the vision, however attained most likely will be temporary.

With the judicious use of these lenses the function of the retina, in most cases, becomes normal. The time required is from a fortnight to many weeks, depending upon the type of the amblyopia and upon the degree of the retinal-image suppression.

Fig. 1 is ground glass; Fig. 2 is a plano, a spherical, a cylindrical, or a spherocylindrical lens. Figs. 3, 4, 5, 6, 7 and 8 are combinations of a ground glass with a plano, a spherical, a cylindrical, or a spherocylindrical lens. These lenses are the "round eye," and may be adjusted in the frames to any desired angle.



## TRAUMATIC SYMBLEPHARO-PTERYGIUM.

BY WALTER HAMILTON SNYDER, M. D.,

OPHTHALMIC SURGEON TO PENSION DEPARTMENT, OPHTHALMOLOGIST  
TO TOLEDO HOSPITAL, TOLEDO, OHIO.

ILLUSTRATED.

G. L., male, aet 58, a veteran of the Civil War. Was ordered to report to me by the pension commissioner incidental to procuring a pension.

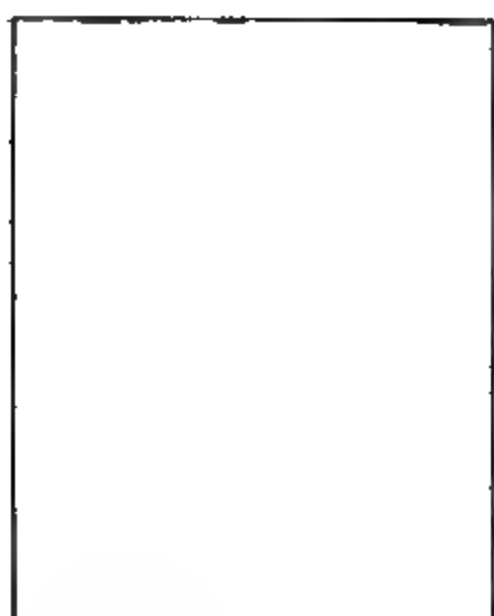
History is as follows:

While the cavalry regiment, in which he was a private, was riding through the woods after the battle of Shiloh, a limb struck him in the right eye. He was temporarily blinded, and the lids badly cut. It healed without trouble, but vision was always less than normal. In 1867 he first noticed growth on cornea, and thinks the lids have since been more or less as they are now. In 1878 he was operated on at Cleveland, Ohio, but in six months the growth had returned exactly as before the operation. I believe the pterygium only to have been operated on.

The condition November 2, 1898, was vision  $\frac{7}{200}$ . A pterygium growing to center of cornea, and no further, although twenty years have elapsed since it first reached there, the base of the pterygium forming a symblepharon as shown in the water color. The tear ducts are absent, as is the caruncle. Without the history of traumatism one could easily believe the symblepharon to be congenital, so soft and normal are the attachments of the base to the border of the lids, and so perfectly symmetrical is the attachment.

The pterygium is unusually thick and dense, with sharply defined edges, as they usually are in my experience, when there is a history of unusual trauma. The patient suffers no pain, but feels a dragging sensation when the eyeball is strongly abducted. The constant epiphora is also annoying, but not to the extent one would imagine.

I fail to find in the literature *any* report of a case that





could be properly designated as symblepharo-ptygium, but the history coincides so perfectly with the etiology of both affections, that I was impelled to designate it as I have.

Dr. Charles A. Oliver, to whom I sent a report and sketch, agrees with me in my diagnosis. He reported a case, with drawing, in the *Medical Fortnightly* of July 1, 1896, of a somewhat similar case, but without the ciliary border of the lid being involved, as in this case.

The patient did not care for an operation, and nothing was suggested as to treatment or prognosis.

912 Jefferson Street.

## OSTEOMA OF THE CONJUNCTIVA.

By J. W. HEUSTIS, M. D.

DUBUQUE, IOWA.

The case here reported is interesting principally from its rarity. The patient from whom the specimen was taken is a young man of 23 years, engaged in clerical work. He applied for relief on account of a bunch, which he could feel under the upper lid of the left eye, and which gave him some inconvenience but no pain. Examination of the eyes showed, V.O.D. 20/20, V, O.S. 20/20. Some slight conjunctivitis, but other wise eye structures normal. By causing him to look downward and inward, at the same time elevating the upper lid as much as possible, the bunch was brought into view near the outer canthus and above the median line.

It was slightly yellowish in color, irregularly nodular in shape and covered by the conjunctiva and conjunctival vessels.

It was slightly movable. It was removed under cocain anesthesia and found to consist of bone, measuring seven millimeters in length, by four in width, by two in thickness at its thickest point and tapered down to a fine edge. Its highest point was a smooth rounded bony nodule, while its under surface was concaved to fit the sclera, over which it slid easily. Consultation of the authorities furnishes the meager information that such growths do occur in the conjunctiva and when found should be removed, with the added statement that they are probably congenital. Graefe and Saemisch, *Augenheilkunde*, Vol. 4, page 157, records two cases and through the kindness of Dr. C. A. Oliver of Philadelphia, I am enabled to add the notes of another. These abbreviated are as follows: Miss S., domestic, age 22, seen at Wills Eye Hospital, October 15, 1897, by Dr. Oliver and by Dr. Harlan in consultation; V.O.D, 5/10 O.S. 5/7½. A small yellowish prominence seemingly part of the sclera and located upward and outward about 1.6 mm. from corneal limbus. Not painful

to the touch. 3 mm. long by 2 mm. wide and equal in height to a foreign body. Upon its removal was found to be bony in formation. Here we have two cases occurring in about the same locality. They may have been congenital or not, with the chances greatly in favor of the latter. They are in my opinion true bony formations in the conjunctiva and must be of exceptional rarity as these four cases are all I have been able to find.

# THE COSMETIC EFFECT OF SPECTACLES AND EYE-GLASSES.

BY F. G. MURPHY, M. D.,

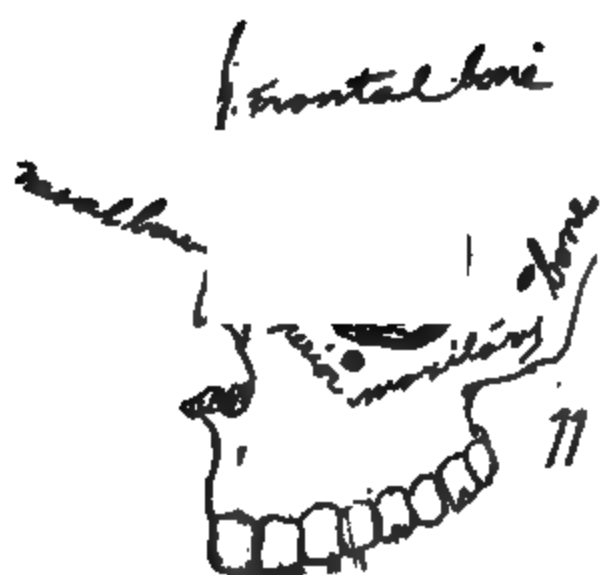
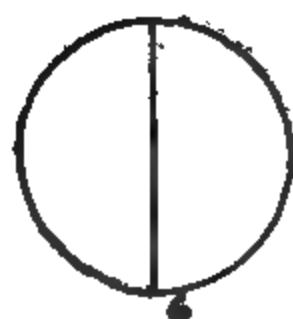
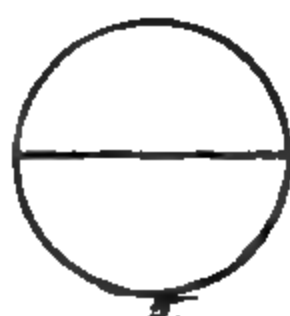
KANSAS CITY, MO.

ILLUSTRATED.

One has but to look in the daily papers at the pictures of the very large number of noted people from all parts of the world to see how little attention is paid anywhere to the proper kind of eye-glasses to be worn, and especially to their adjustment.

The ophthalmologist who understands how to adjust an eye-glass, and appreciates the effects of an eye-glass or a spectacle in overcoming a facial imperfection, as well as the proper correction of ocular defects, will have his services doubly appreciated. Many people would rather wear a glass that did not correct the ocular anomalies than to wear one that was satisfactory, but exaggerated the defect in one of their features, about which they are particularly sensitive. The oculist will work diligently for weeks to remove an opacity on the edge of the cornea for the cosmetic effect, or straighten an eye that is perfectly blind to correct the deformed appearance, but pays little attention whether a long nose is made to look longer, a short nose shorter, a wide one wider, a hump on the nose higher; that a short face is to look shorter, or a broad one broader.

Glasses must be worn to correct the ocular defects, and as they exaggerate or improve any of the above named features that are slightly out of proportion, it seems to me it is the business of the ophthalmologist, who has a knowledge of the anatomy of the face, to prescribe a glass that will not make more conspicuous a feature that nature has neglected. That oculists pay little attention to these things, and frequently leave the selection and adjustment to their optician, is very apparent from the glasses seen on the spectacle-wearing public.





## 22 COSMETIC EFFECT OF SPECTACLES AND EYE-GLASSES.

A spectacle broadens and shortens the face, and patients whose features are already out of proportion in that respect will have them increased by wearing a spectacle (figures 3 and 4). A line drawn across the face from ear to ear divides the face into an upper and lower half, the same as a line drawn through the circle from side to side makes it look broader and lower (figures 5 and 6).

The dimensions of the face in figure 3 are the same as in figure 4, yet figure 3 looks broader. Figure 5 looks wider than figure 6, but if the figure is turned one-quarter around, figure 6 looks the wider. Spectacles make one look older, by adding a prominent line from the corner of the eye to the temple, where the deep lines appear to mark the approach of advancing years (figures 9 and 10).

Figure 10 shows the effect of several lines drawn from the corner of the eye to the temple, which makes the figure look like an old man, while in figure 9 the same lines are absent, and the face looks like that of a small boy. Where the lower ends of the nasal bones are quite prominent and the nose has a hooked appearance, as in figure 7, the nose-piece of the spectacle presses the softer parts just above the hump, and makes it appear much more prominent. The spectacle makes a long nose of greater length by pressing back the soft parts. The eye-glass relieves the prominent nasal bones by pulling the skin just above the prominence upward (fig. 8).

The width of the spring also cuts the nose a little shorter in the side view.

Few noses are so thin that they need broadening, but the appearance of many people is improved by slightly pressing together the soft parts between the guards.

Spectacles are an improvement to a very short nose, which usually turns up on the end a little; but, unfortunately, short noses are usually accompanied by a broad face that the spectacle does not improve. If the temples are narrow, and the nose short, a spectacle is very becoming. There is nothing to be gained, however, in slightly increasing the length of a short nose at the expense of broadening a wide face. In these cases I prescribe an eye-glass which improves the view from in front. The eye-glasses have decidedly the advantage of the

spectacle, usually in improving the facial appearance of the patient when the right kind are worn, and the patient taught to adjust them properly (as in fig. 1), they are more comfortable as well. I find that spectacles with rims and the rimless eye-glasses give the best satisfaction. To prescribe a rimless spectacle is very discouraging, for most people break them frequently, and finally come to the conclusion that their oculist did not give them good advice. Many oculists do not prescribe eye-glasses, because they have little success in teaching their patients how to wear them. The fact that many people have the impression that eye-glasses injure the nose, that their nose is not in the right shape, or that cylinders are not held in place properly by them, does not come altogether from irresponsible people outside of the medical profession. Oculists who do not know how to prescribe an eye-glass are apt to discourage their patients in some way from wearing them. Figure 2 shows the manner in which many patients try to wear an eye-glass. A nose must be very much out of shape if an eye-glass cannot be worn.

Figure 11 shows a sketch of the bones of the face where nature has made provision for carrying that which corrects the ocular defect.

The upper half of the nasal bone along its articulation, with the superior maxillary, is a slight depression where the guards, when properly placed, will rest, the upper end of the guard crowding the frontal bone at the point of its articulation with the nasal and superior maxillary bones. This line, marking the junction with the nasal and the superior maxillary bones, slants at an angle of about  $35^{\circ}$  to a line drawn from the forehead to the chin. In my opinion the Wells guard that slants at the same angle from the plane of the lenses is the most satisfactory guard. Many patent guards are on the market, and many of them worn, but there is nothing more satisfactory than the Wells guard, when properly adjusted. To adjust a Wells pince-nez open the guards sufficiently wide to allow them to go back as far as possible without touching the nose; then allowing the guard to grasp the nose, the upper end of the guard pressing up snugly against the frontal bone, and the spring resting against the forehead as in the first position of the guards in figure 12. It is then necessary to

## 24 COSMETIC EFFECT OF SPECTACLES AND EYE-GLASSES.

allow the guards to grasp tightly, and at the same time keeping the spring against the forehead, as the lower edge of the glasses are made to slide forward and upward until the guards are in the second position—as shown in figure 12.

It is usually sufficient to tell the patient that the upper end of the guards must crowd the bony arch covering the eye, and that the spring must touch the forehead. In most cases, however, it is necessary to set the guards back, and then slide them upward and forward as described, so that the skin on the nose will not let the spring tilt forward away from the forehead when the fingers are removed from the glasses.

The writer, in his paper, refers to glasses that are to be worn constantly. Patients are inclined to pay little attention to the oculist's instructions at first, unless he impresses it on them firmly that their comfort and ability to wear the eye-glasses depends entirely upon their accurately following his instructions.

2d Floor, Diamond Building.

## SIMPLE ENUCLEATION NOT A PROPER SURGICAL PROCEDURE.\*

By H. MCL. MORTON, M. S., M. D.,

OCULIST AND AURIST TO THE ST. BARNABAS AND NORTHWESTERN  
HOSPITALS, MINNEAPOLIS, 1898.

The indications for enucleation of the eyeball are observed in the following conditions:

First, traumatism or the sequelae of traumatism, as atrophy of the globe and phthisis bulbi.

Second, acute or inflammatory processes or their sequelae, as panophthalmitis or chronic processes involving the iris or ciliary zone of the eye.

Third, tumors, either intra or extra-ocular.

Where these indications are met with the usual procedure is simple enucleation. I desire to contend that this method alone is not a sound and justifiable surgical procedure with which to meet these indications. When such cases present themselves to us we may operate with the well-known method of Mr. Mules, or by the operation proposed by myself, and described in detail in the *New York Medical Journal* of October 30, 1897. In both of these operations a glass sphere is inserted as a substitute for the eyeball, which is either removed entire or eviscerated according to the method used. In the Mules' operation, the scleral cup is utilized for the insertion of the sphere and the cavity subsequently closed by sutures. In the opera-

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NOTE:—Since writing my first paper, I have learned from an article sent me by L. Webster Fox, of Philadelphia, that Mr. Frost, of the Royal Ophthalmic Hospital (Moorefields), has performed an operation somewhat similar. Until recently I have known nothing of this and so far as I can learn from an ellusion made to this by Dr. Fox, the operation only resembles the writer's in the mere insertion of the sphere. The exact method of suturing the tendons (the essential to success) in no manner resembles the writer's. (See *New York Medical Journal*, October 30th, 1897.)

\* Read before the Minnesota State Medical Society, June 16, 1898.

## 26 SIMPLE ENUCLEATION NOT A PROPER SURGICAL PROCEDURE.

tion performed by the writer, the sphere is inserted into Tenon's capsule. I will quote from my first paper as to the method of its performance:

"The patient being anaesthetized, a circular incision is made in the conjunctiva close to the corneal limbus. The internal rectus is dissected free from surrounding tissues up to its attachment to the globe, and held by a pair of advancement forceps, after which it is cut close to the sclera. A double needle catgut suture is passed from within outward, inclosing the central bundle of the tendon and tied to its external surface. The ends of the suture, which are cut to a generous length, are now laid aside to the nasal side of the field of operation. The external, the superior, and inferior recti are treated in a similar manner. The oblique muscles are cut, and, no suture being used, escape. The globe is removed after section of the nerve, and all capillary hemorrhage stopped before we proceed. The glass sphere is now placed into the cavity previously occupied by the eyeball, and now lined with the parietal and a portion of the visceral layer of Tenon's capsule.

The sutures holding the externus and the internus are now taken by the operator, the assistant taking at the same time the sutures retaining the superior and inferior recti. Before the second turn is made in the sutures held by the operator, the assistant ties the sutures together, and these are inclosed in the final turn of the knot holding the external and internal recti. The sutures are now inclosed in a common knot at their intersection.

I have attempted to explain this process of tying the sutures in detail, since it is of the most vital importance for two good reasons, as I will now proceed to explain. In the first place, should the sutures slip over the glass sphere (the horizontal up or down, the vertical in or out), it would escape from the cavity as placed, and put all of the strain upon the light silk sutures in the conjunctival wound. The second is, if anything, a more important reason; for, should the suture slip, the normal position of the muscles (as retained by this method) upon the glass ball is disturbed, and a condition of unequal tension results, which destroys the proper movement of the artificial bulb. This is a point in the operation that I desire to lay stress upon—

i. e., *the careful adaptation of the sutures, so that the tendons assume the same position they occupied in the living eye.* By attention to this point, which is obtained by the method of tying the sutures, the excursions of the artificial ball are as unrestricted as in the "Mules's Operation." The muscles are retained in their place by a process of adhesive inflammation to the over-lying and surrounding conjunctiva, which is completed before the sutures are absorbed. It must be clearly understood that the tendons are not sutured together, but merely held in a normal position until retained by the inflammatory process. The catgut sutures and sphere are now covered by the conjunctiva, which is held by interrupted sutures of Chinese silk. I dust some finely powdered iodoform into the cul-de-sac and apply a bandage, which is allowed to remain for three days. It is interesting to note that the reaction which follows in this operation is very slight, and as a rule causes the patient no pain or elevation of temperature. At the end of three weeks the patients wear the artificial eye with comfort.

In a paper published by Dr. L. Webster Fox, (Implantation of a Glass Ball in the Orbit after Enucleation of an Eye), he says:

"In my first patient the glass eye did not lie directly in the centre of the orbital cavity, and consequently the adjustment of an artificial eye was not entirely successful, although there was great improvement over conditions existing prior to this operation."

These remarks suggest the value of the writer's method of retaining the ocular muscles at *corresponding points* (not drawn with the ends in apposition) to their original attachment to the eyeball. When this is done, the sphere will remain in a normal position and afford a satisfactory basis for a prothesis.

This operation may be performed in all cases and the cosmetic effects, equal, in my judgment, the Mules operation, while the latter is limited in its application. The Mules operation is obviously inadequate to fulfill the indications where we have extreme atrophy of the globe or phthis bulbi, or in cases of severe traumatism.

The advantages of either of these operations are very

## 28 SIMPLE ENUCLEATION NOT A PROPER SURGICAL PROCEDURE.

great over simple enucleation. These advantages are nicely epitomized by Mr. Mules (in speaking of his own operation) as follows:

<i>Enucleation</i>	<i>versus</i>	<i>Mules' Operation.</i>
1. Complete removal of globe and its contents.		1. Retention of the framework of the eye.
2. No stump, therefore sunken eye.		2. A firm, round globe forming perfect support for artificial eye.
3. Disturbance of all muscular relations and arrest of movement.		3. Perfect harmony of muscular movement retained.
4. A fixed staring eye attracting attention.		4. Fitted with selected eye defies detection.
5. Patient shuns society.		5. No qualms as to personal appearance.
6. Arrested development of orbit in case of children.		6. No interference with growth of orbit.

To these I should like to add a Seventh and Eighth, namely:

7th. That the glass sphere holding as it does the prothesis closer to the inner canthus and puncta lachrymalis permits the tears to drain away almost, if not quite as perfectly as in the normal eye.

Again,

8th. This accumulation of tears noticeable in cases wearing a prothesis after simple enucleation, leads to stagnation and accumulation of matter which continually gathers and dries up in the artificial eye and accumulates at the lower lid margin giving an uncleanly and disgusting appearance, and in some cases, leading to odor. These advantages of the substitution of a glass sphere for the original globe are so manifest that I feel justified in contending that the removal of an eye without this substitution is not a proper surgical procedure.

Finally, I will suggest that my experience in several of these operations leads me to suggest the insertion of a

slightly larger sphere than is called for in Mules' operation. It is my intention to have a set of these made upon a slightly larger scale than those now worn as the "Mules' Set."

315 New York Life Building.



ABSTRACTS FROM RECENT GERMAN OPHTHAL-  
MIC LITERATURE.

Quarter Ending January 1st, 1899.

BY

H. V. WÜRDEMANN, M. D.,

OF

MILWAUKEE, WIS.

**Luxation of the Eyeball from Sneezing.**

SCHANZ, FRITZ, Dresden, (*Beiträge zur Augenhkde.*, XXXIV, September 24, 1897,) reports a case of a glass-blower who had been previously examined, who then had normal sight in either eye and no fundus changes. Patient came later, stating that in sneezing an hour before his right eye had fallen out of its socket.

He had just blown a very large bottle when a draft of gas struck his face, resulting in a fit of sneezing, when the right eyeball had fallen out of the orbit. This was replaced with considerable force by fellow-workmen. On the way to consultation he sneezed again, and the eye came forward, but went back by itself. He sneezed at the office, then the eye came out between the lids and was replaced. The eyelids were emphysematous, the crackling could be heard, and likewise felt; at the inner angle there was exudation of blood. When the eyelids were parted the emphysema of the post-ocular tissue became more visible. The patient was warned about the danger of sneezing, and one week later the emphysema was found to have disappeared.

Following this recurrent luxation there was slight inflammation of the optic nerve, with diminution of vision, visible by the ophthalmoscope. Ten days later the appearance of the fundus and vision were normal. Four

months later the vision of the eye was apparently reduced from  $1/2$  to  $1/3$  of the normal, and the patient later claimed that the vision had still further diminished, but Schanz, on account of there being no changes in the fundus, questions the reliability of this test, as the man may be malingering. He thinks that as this patient uses the muscles of his face considerably in blowing while working at his trade, that the force in the mouth became so great that the parotid gland filled with air and was driven upward. The patient had considerable catarrh, on account of breathing in so much hot air, and he was accustomed during the act of sneezing to blow out his cheeks in the same way to that which he used during his work. This high degree of air-pressure in the nose led to the thinning of the wall between the nose and the orbit, and the act of sneezing burst in this spot, causing the emphysema and luxation of the eyeball.

Some glass blowers do not use their cheeks in the act of blowing, getting the force needed from their lungs; others use their cheeks. The history of this case is a contribution to the diseases consequent upon certain trades. It is certainly an exceptional case, but must be included under this category.

**Treatment of the Trachomatous Disease of the Cornea, Especially Ulceration.—A Clinical and Theoretic Study.**

BLUMENTHAL, L., Riga, (*Beiträge zur Augenhkde.*, XXXVI, November 29, 1897,) occupies an entire number of the *Beiträge* (67 pages,) with an exhaustive treatise upon this subject. General treatment of corneal ulcers should be directed: 1, toward the external, hurtful influences which have caused the original disease; 2, toward the ulcer itself; 3, toward any known general diseases which lower the general nutrition and that of the cornea. Under the first group the author lays particular stress upon the treatment of accompanying disease of the lacrimal apparatus. Under the second group antiseptics, mydriatics and myotics, hot applications and operations are considered. Special consideration is given to the direct treatment of trachomatous ulcers under the following headings:

- a. Ordinary trachomatous ulcers of the cornea.
- b. Pannus trachomatous corneal ulcers.
- c. Infiltrated trachomatous ulcers.
- d. Suppurative trachomatous ulcers.

Periotomy and peridectomy are recommended in trachomatous ulcers, and cases are cited in full in support of favorable action. Treatment of trachomatous pannus by medicaments and various operative procedures is described. He is extremely radical in recommending excision of the infiltrated retrotarsal folds. He claims that this method excels any other in all cases of severe trachoma. He further claims that in very many cases the trachomatous infiltration is limited to the fold of transmission, and that excision of this tissue is a permanent radical cure. Twelve pages are given to support this theory.

His resumé is as follows:

1. The character of the ulcer itself in most cases of trachomatous corneal ulceration is to be considered rather than the relation of the ulcer to the original conjunctival disease.
2. In the case of superficial corneal ulcers in trachomatous pannus, so long as there is no hypopion, cutting of the vessels by periotomy or peridectomy (when the use of copper sulphate and a short trial of other medicaments has been made,) leads quickly to success.
3. The operation is without danger.

#### **Protargol.**

WICHERKIEWICZ, KRAKAU (*Die Ophthal. Klinik*, Sept. 20, 1898,) gives his experiences with protargol, which have been decidedly satisfactory. He states that hitherto he could not practice ophthalmology without silver nitrate, but since the appearance of some of the substitutes he had tried them. All the substitutes have silver for their basis, and of all of these, protargol has the most therapeutic worth. Protargol contains 8.3 per cent. silver, more than all the new silver salts, argentamin 6.35 per cent., argonin 4.2 per cent. He does not consider that protargol is as good as nitrate of silver or acetate of lead, or other astringents in the case of acute granular or catarrhal conjunctivitis. It is also surpassed in follicular and chronic granulation by

xeroform. Protargol in 5 per cent. solution in ulcers of the cornea has an especially active therapeutic effect. In suppuration of the lacrimal passages it is the best medicine we have, but it must be used in the proper way to obtain a good effect. The tear sac and the canal should be dilated with as large a canula as may be comfortably passed, washed out with boric acid solution, then with clear water, and then a 10 to 20 per cent. protargol solution injected. The suppurative secretion soon becomes catarrhal and much less in quantity; the cure is quicker if the injection can be done twice a day. He likewise gives the patient 1 to 2 per cent. solution to drop and massage in the innerangle of the eye.

In addition to this he uses lacrimal probes, and when the secretion is of a catarrhal nature, likewise injects astringent solutions 1/2 per cent. sulphate of zinc or copper,) separately, or mixes them with the protargol solution. Protargol is an absolute specific for blennorrhea of the new-born or the adults. He deems it unfortunate that Neisser has recommended so weak a solution as 1/4 to 1 per cent. for urethral gonorrhea. Wicherklewicz has used much stronger solutions in the eyes, preferring 20 per cent. applications by the brush; he likewise uses a 3 per cent. boric acid, or 1 to 10,000 sublimate ointment, and has a 1 per cent. protargol sol. dropped in the eye every 2 hours. He has had the opportunity to compare the work of protargol with that of nitrate of silver in many cases, using protargol in one eye and the nitrate in the other. He has not seen argyrosis of the conjunctiva follow the use of protargol, although the solution stains clothes and skin.

#### **The Internal Treatment of Glaucoma.**

WALTER, O., Odessa (*Die Ophthal. Klinik*, November 5, 1898,) follows the theory of Czermak, who has considered that the disposition for glaucoma lies in the flattening of the anterior chamber, which crowds the root of the iris into the angle and hinders the diffusion of the aqueous. Therefore, all causes which diminish the diffusion of aqueous humor may give rise to glaucoma. Senile changes in the blood vessels and constitutional anomalies, which give rise to arterio-sclerotic and atheromatous changes, are

prime causes in the production of this condition. The connection of gout with glaucoma can only be brought with difficulty in line with Czermak's theory. Gout is a disease due to disturbance of nutrition par excellence, and is accompanied by chemical changes in the blood, which can readily alter diffusion and filtration through the vessel walls and epithelium. We, therefore, find many changes in the vessels following gout in the joints, muscles, bones, skin and viscera. Sometimes the existence of gout may first show itself in the eye. The connection of gout with glaucoma has been pointed out by Schmidt-Rimpler and others, but Jacobson, Knies and others have denied this supposition. Walter describes one case in detail occurring in a 56-year-old woman, which was cured by 1 gram of pyperazin daily, in connection with iridectomy and the use of a 1 per cent. solution of pilocarpin. The vision in this case was restored to normal. He endeavors to substantiate the claim that the anti-lithemic treatment was the principal factor in the restoration of vision, as the patient had previously had an iridectomy done upon the other eye without benefit, as it had been followed by closure of the pupil from irido-cyclitis, and the iridectomy was not immediately beneficial in the other eye, as well as the fact that the improvement of vision and stoppage of the symptoms occurred after the patient had stopped the use of pilocarpin for one month. He recommends the employment of anti-lithemic general treatment, especially in glaucomic cases in which there are other symptoms of the gouty diathesis. In connection with the use of pilocarpin and eserine locally, before the iridectomy be made, as he has frequently seen the operation followed by diminution of vision from the production of astigmatism and dazzling ensuing from the coloboma. On account of the cost of pyperazin, this treatment can be at present only administered to the better classes.

#### **The Absorption Power of Potassium Iodide After Cataract Operation.**

WICHERKIEWICZ, Krakau (*Wochenschr. f. Therap. u Hyg. d Auges*, September 8, 1898,) recommends the exhibition of iodide of potash in all cataract cases after operation,

where the cortical substance is not freely absorbed as well, as in discission cases, and especially during the operative treatment of high myopia.

It is necessary to give large doses, ordinarily from 3.00 to 5.00 grams, and sometimes as high as 10.00 a day. Under exhibition of this medicine in sufficient quantity the necessity for so many operations following cataract extraction is eliminated.

#### **Double Refraction In an Eye from Nuclear Sclerosis.**

GUTTMANN, E., Breslau (*Centralbl. f. prak. Augenhkde.*, July, 1898), describes a case occurring in a man 54 years old, seen in April, 1898, on account of loss of vision of the right eye. Eight years before his eyes were measured and found to be 1.0 D hyperopic; with the correction his vision was normal, as were his eyes in other respects. At last examination vision of right eye, without correcting lens, was 5/30, with  $+ 2,0 = 5/5$ , read well with  $+ 3,0$  at 22 cm. The eyes absolutely normal, except the hyperopia in the right eye; he could read without glasses. The central refraction was found to be  $- 5,0 V. = 5/30$ . The eye being atropinized there could be seen, on oblique illumination, a grayish area corresponding to the nucleus, which was likewise apparent as a shadow by the ophthalmoscope. On closer examination the nucleus was perfectly clear, and with the myopic correction, fundus details could be accurately distinguished.

The literature of this subject is freely quoted. In closing, the author considers that this condition is an exaggerated sclerosis of the lens nucleus, which greatly increased the central refraction, that it is the beginning of lenticular cataract, and that it is advisable in this case, on account of disturbance of vision, to make an iridectomy and massage the lens, to ripen the cataract and subsequently extract it.

#### **Advancement with Splitting of the Muscle.**

PRAUN, ED., Darmstadt (*Centralbl. f. prak. Augenhke.*, September, 1898), describes a new method of advancement;

1. After vertical incision over the tendon insertion and Tenon's capsule, the muscle and tendon are freed from attachments and hook passed beneath.

2. Double armed threads are passed above and below, directly behind the hook, through the upper edge of the tendon, drawn tight and tied in the middle, so that the needles remain on the ends.

3. The tendon is cut and split lengthwise in the middle, even down to the muscle fibers, by straight scissors.

The ends of the tendons are diverged, the upper above, the under below; the upper two needles are carried above under the conjunctiva to 2 mm. to corneal edge and pierce through the episcleral tissue and conjunctiva, coming out about 2 mm. apart and tied tightly; the lower the same.

5. The conjunctival wound is sutured over the advanced tendon.

He claims for his method: No twisting of the axis, greatest degree of advancement, the use of silk and exact suturing over the former tendon attachment.

#### **The Danger to the Eye from Ligature of the Common or Internal Carotid.**

SIEGRIST. (*Heidelberg Congress of Ophthal.*, August, 1898.) Gives two cases: 1. Ligature of the common and internal carotid for hemorrhage following operation for carcinoma of the tongue. Sudden blindness on the side of the ligature, presented the feature of embolism of the central artery of the retina, section six days later; ascending thrombosis from the site of the ligature, and extending 6 mm. into the ophthalmic artery. Central artery blocked near its origin by an embolus, the latter being overlaid with a thrombotic mass. The retinal changes concern the inner layers. Infiltration advancing from periphery to center of cornea, with small central ulcer, and peculiar changes in the epithelium.

2. Pulsating traumatic exophthalmos, ligature, blindness on the same side embolic in character; five months later atrophy of the papilla; choroidal vessels all visible, partly normal, partly sclerosed; fine pigmentation of the retina. After a year and a half the macular region showed no sclerosis, but still fine flecks of pigment; in the



upper part of the fundus the choroidal vessels were completely sclerosed, and the retinal pigment was heaped up in masses around this area.

#### **The Reflex Pathway for the Pupillary Reaction.**

BERNHEIMER, ST., Vienna. (*Arch f. Ophthal. Bd. XLVII. 1. 1898.*) The anatomic connections of the relations of the visual fibres with the nucleus of the oculomotorius, and especially with the center of the pupillary reaction, have not as yet been anatomically demonstrated, although the physiology is well known. The author has made many examinations of embryonal brains without definite results, but through experiments with monkeys has definitely localized the pathway of the pupillary reaction.

The supposed partial decussation of the optic nerve fibres must be further substantiated by more experiments. (Degeneration examinations and division of the chiasm on living monkeys.) This is likewise true of those nerve fibre bundles, which have to do with the pupillary reaction, which partially cross in the chiasm. (Degeneration experiments and examination upon living monkeys.) These partially-decussating pupillary fibres interweave, especially with the accompanying optic nerve fibres in the entire visual tract from the chiasm to the corpus geniculatum externum. From here the fibres pass partially to the inner boundary of the outer geniculate body, and partially through the inner wall of the same, and connect on the inner and upper portion of the ganglion in a compact bundle. This bundle of fibres turns here, about and under the inner geniculate body and over its convexity against the lateral sulcus of the anterior corpora quadragemina, and then passes in a fanshape into the substance of the anterior quadragemina; from here it goes in a doubly-curved direction posteriorly upward and then downward and forward to under the origin of the aqueductus and finally to a small-celled pair of medial nuclei, the sphincter nuclei. In this bundle of fibres, each sphincter nucleus is connected with the eyes on both sides with both crossed and uncrossed fibres. Besides the double connection of the sphincter nucleus with either eye there is also a central connection between them. (See experiments upon living



animals and accompanying schematic illustration.) The existence of this central connection of both nuclei has not been yet irrefutably anatomically determined. It is exceedingly probable that this connection occurs through contact in the middle line by means of the ganglion cell processes. (Golgi preparations.)

Although we have all these facts, the connection of the pupillary reaction with the visual fibres (so-called pupillary fibres) is not yet positively determined, but is theoretically offered. All of his experiments as well as those of others have shown that the ganglion habenulae has no relation with the movements of the iris, and that Darkschewitch's nucleus is only a deep nucleus of the posterior commissure. Finally, he concludes from degeneration experiments, described in the article, that the nucleus of the internal muscular apparatus of the eye lies in the anterior portion of the anterior quadragemina, under the aqueductus between the lateral nuclei.

#### **Etiology and Variability of Corneal Astigmatism.**

STEIGER, Zürich. (*Arch, f. Augenhkde*, XXXVI, 128-139. 1898.) The author has had occasion to change his mind from the results of previous examinations, that the total astigmatism of an eye could be determined from measurement of the cornea. The subjective examination by Javal's Ophthalmometer is, however, not superfluous. In moderate grades of astigmatism there can be full visual acuity, and yet painful asthenopic symptoms may appear. In a certain amount of astigmatism for instance, 3.0 D, the visual acuity of a person may vary greatly; for instance, at times being 0.8 to 0.25. It is very necessary to correct an astigmatism when it causes diminishment of vision or asthenopia, or chronic recurrent inflammation.

The author does not think that an uncorrected astigmatism which gives rise to no difficulties can have bad effects. Carhart's observation, that progressive myopia of the cornea and alterations in its curvature, is caused by astigmatism, is deemed by the author to be incorrect. Carhart positively states that increase of astigmatism occurs with age; other observers, for instance Stocker, have not upheld this. They, however, show that there is

increase of myopia in school children from the lower classes up to the highest, the proportion of cases of astigmatism remains the same in all the classes. The fact that in younger persons hyperopic astigmatism is the rule, and that more myopic cases are met with later, does not speak for change in the astigmatism, but rather for an increase in the length of the optic axes, the original hyperopia of the eye is converted into emmetropia and later into myopia. The corneal curvature can certainly change, but this does not occur in young persons, but rather in the adult some time after the full growth has been reached, and it generally takes the form of perverse astigmatism, the axis of which is not according to the rule, as is most common in the young. This perverse astigmatism, which is frequently found in the elderly, has nothing to do with the development of myopia.

**Glaucoma After Neuroretinitis Albuminurica and Neuroretinitis—Proliferans.**

WEHRLIE, E. (*Arch. f. Augenhkde*, XXXVII, 3, 1898.) This very complete article describes anatomico-pathologic appearances of two enucleated eyes. The most important change in both cases was the high grade of vessel wall degeneration which had caused partial thrombosis and hemorrhages in the retina and vitreous body and led to increase of tension. Besides this, in both cases there was found obliteration of the angle of the anterior chamber, atrophy and fibrous degeneration of the iris, which had entirely lost its spongy character and endo-phlebodic processes in the vortex veins. In the first case, that of a 37 year old patient, who had ocular disease in the course of an acute nephritis; the vessel wall degeneration had given rise to extensive new tissue formation into the retina and vitreous body similar to that occurring in nephritis proliferans. This degeneration occurred in the retina and had not affected the choroid.

The author explains the new tissue formation by the relative youth of the patient and the acuteness of the general disease which had left the uvea intact. If, as the author claims, the choroid remains normal or at least anatomically perfect, it preserved its function in nourish-

ing the very much damaged retinal vessel system and this means the degenerative exudations arose. This new tissue formation is not supposed to have arisen through organized bleeding into the vitreous body, but rather from hyperplasia of the adventitia of the degenerative vessels, and also from proliferation of Müller's fibres in the region of the thrombosed vessels. Upholding this standpoint, was the condition of the other eye in which there was perivascular vessel wall changes without bleeding, causing typical new tissue formations in the vitreous.

In the second case of a 50 year old patient a monocular neuroretinitis occurred in the course of a chronic nephritis. The degenerative changes in the vessels were of a much less active character, these occurred principally in the retina and uveal tract. The absence of extensive proliferative changes in the retina, is supposed by the author to be due to the poor nourishing qualities of the choroid, the age of the patient and the chronic nature of his general disease. The other changes of note in both cases were thrombosis of the art. ciliaris longa. In closing the author calls attention to the possibility of kidney disease in all cases of primary glaucoma even when there are no retinal changes to be seen.

#### **Spontaneous and Post-Operative Retinal Detachment in Myopia.**

FRÖHLICH, C., Berlin. (*Arch. f. Augenhkde.*, XXXVIII, 1, 1898.). Since his reports in *Arch. f. Augenhkde Bd.*, XXV, Heft 4, 1895, has operated upon six eyes, in five cases without any noteworthy damage and with satisfactory results. In the sixth case of a schoolboy, aged 15, with R.—40 D.=1/6 with media clear, there was a moderate posterior staphyloma. Nov. 11, 1897, a crossed discission of the anterior capsule was made, which was followed by ciliary injection and slight swelling of the lens. A few lens flocculæ fell into the anterior chamber; on the 21st of Nov. the lens was entirely opaque and an upward linear extraction was made. A large portion of the lens matter escaped. There was neither loss of vitreous nor prolapse of the iris. Dec. 4 paracentesis of the anterior chamber was made which removed the balance of the

lens substance. The pupil became black, but a pearl of vitreous came forward into the corneal wound. Dec. 15 there was a round and almost entirely black pupil, in the temporal portion of which there was the capsule of the lens, from which a gray string extended to the corneal wound; the eyeball was perfectly quiet. In Jan. he reported that the eyeball was quiet and that he saw very well, but in February the vision became poor and detachment of the retina was discovered in the lower portion. The tension of the eyeball was decidedly diminished. Fröhlich thinks that the retinal detachment in this case was of an operative nature and occurred as a result of the second paracentesis on account of the prolapse of the vitreous and the subsequent contraction of cicatricial tissue.

Seven other cases have been reported of detachment following needling operations for myopia in all of which there was some weeks interval between the operation and occurrence of the detachment, in two of these portions of the lens capsule were caught in the wound, and in the other five there was prolapse of the vitreous. He considered that a portion of the vitreous becomes organized, and contracts in the wound which gives a fixation point for pulling away of the retina. He does not think that these cases may be called idiopathic. Certainly all prolapses of the vitreous do not cause detachment, this occurs, however, in about 20 per cent. of the cases. Out of 58 operated eyes he has had detachment of the retina in six cases.

In the second portion of his article the author shows the relative proportion of high myopes who have spontaneous retinal detachment. The percentages of this condition gathered from the reports of various authors show the rate between 2.2 and 4.5 per cent. In operations upon myopia, the total loss by infection or detachment is 2.2 per cent. making the total loss in high myopia by infection and by retinal detachment 5.5 per cent. He has collected reports of 572 eyes, showing these two items of danger. It is necessary, however, that at least 1000 authentic cases be collected to learn anything from statistics.

**Ocular Crises In Locomotor Ataxia.**

PEL, (*Berl. Klin. Wochenschr.*, Jan. 10, 1898.) relates the following case. In a man aged 41, with undoubted tabes and commencing dementia, the sensory symptoms were comparatively few. Hemorrhages were noted in the skin over the course of the perineal nerves after the lancinating pains. The attacks, referred to the eyes, consisted in marked burnings and stabbing pains in the eyeballs and neighboring parts, powerful spastic contraction of both orbiculares, abundant secretion of tears, and reddened and swollen conjunctiva. There was also hyperesthesia in the skin, round about the eyes. These attacks may have been due to irritation of the trigeminal nerve with so-called ciliary neuralgia.

Affections of the trigeminus are not so very rare in tabes, such as anesthesia, hyperesthesia, neuralgic pains, falling out of the teeth, etc. In this patient the sight, between the attacks, was perfect. These attacks could not possibly have been due to any drug treatment, as they persisted when the iodids were omitted, and were also present under indifferent treatment. This case provides further evidence of the multiplicity of the symptoms of tabes dorsalis.

**A Case of Hemianopsia Following Traumatism.**

WICKEL (*Berl. Klin. Wochenschr.*, Oct. 24, 1898.) reports the case of a boy, who at the age of 5 months, was thrown down a flight of stairs, striking the back part of the head, and remaining unconscious for several days. About a week later a large fluctuating swelling developed at the site of the injury, which required three punctures. Immediately after the fall the boy developed strabismus, but otherwise showed no symptoms, excepting from time to time severe headaches, and he was unable to attend school. The head and hands were in continual movement. At the age of 10½ years the boy had suffered from attacks of discomfort in the head that later were followed by loss of consciousness and epileptic attacks. Considerable impairment of intelligence also was noted at about this time. In the occipital region was a depressed area that

was the seat of pulsation. Examination of the fields of vision disclosed the existence of a left sided homonymous hemianopsia, which was ascribed to the injury. Reading was possible however. The internal strabismus of the left eye was thought to be possibly due to the hemianopsia, the patient preferring to see with the large temporal field of the right eye. It is assumed that there was degeneration or rather failure of development of the right optic tract.

### **Acute Epidemic Ophthalmia.**

GREEFF (*Berl. klin. Wochenschr.*, May 16, 1898.) says hardly a year passes by without an outbreak of acute Egyptian ophthalmia. No district is quite free, and each year acute ophthalmia makes its presence felt in or about Berlin. In the early Napoleonic time, Egyptian ophthalmia is said to have destroyed the sight of many hundreds in a few days. In pursuance from the orders from the government, Greeff has had good opportunities to carefully study true trachoma in the regions where it is very common, and also one such epidemic in a district hitherto free. He discusses the features of certain epidemic ophthalmias which, though often confounded with trachoma or Egyptian ophthalmia, are really distinct. The mode of outbreak is not like that of trachoma, which does not spread so rapidly; trachoma is no doubt contagious, but every contagious ophthalmia is not trachoma. The contagious character of trachoma shows itself rather in the slow invasion of the other members of the household or family, of whom one or more has been affected for years, and this usually in a country or district where the disease has been endemic for a century, or it may be for ten centuries. He contrasts certain forms of conjunctivitis with another and with trachoma.

1. In pneumococcus conjunctivitis, the pneumococcus (Fränckel-Weichselbaum) occurs as an occasional inhabitant of the normal conjunctiva, and it may increase so as to bring about an epidemic. It is generally children it attacks; adults are but rarely affected. It is a transient malady, running a benign course somewhat quickly.

2. Morax' and Axenfeld's diplobacillary conjunctivitis is a more chronic variety, in which the lids participate largely. In cover-glass preparations the germs are very numerous; lying for the most part in pairs, less frequently in chains. Implantation upon normal conjunctiva produces typical conjunctivitis. It is not certain that any epidemic of this has actually occurred.

3. The conjunctivitis of the Koch-Week's bacillus seems to be the most frequent of the contagious conjunctivitis. When in Egypt, Koch found the germ in cases of the slightest form of so-called Egyptian ophthalmia.

It is the cause of acute contagious conjunctivitis. It sets in very rapidly. Both eyes are usually affected; pain, lacrimation, photophobia, and a sense of burning are complained of. The inflammation lasts about two weeks, and the prognosis is uniformly good. As regards the bacterial origin of trachoma there is nothing settled; whether a diplobacillus or bacillus septatus is the cause is not certain. In case of an epidemic conjunctivitis arising, it is possible to make a diagnosis of its true nature by examination for micro-organisms. Sometimes it happens that the medical officer of a school makes the alarming discovery that a great number of students are suffering from follicular enlargement, and he may find it necessary to close the institution. He must be careful not to be misled by an epidemic of follicular catarrh, or, to be more accurate, follicular swelling. Schmidt-Rimpler, while engaged in the study of the cause of the frequency of shortsightedness in schools, noticed that many children suffered from some affection of the conjunctiva, and decided to make inquiries as to the frequency of catarrh, etc., at the time when there was no epidemic; he found a percentage of 34. On investigation Greeff finds follicles in 27 per cent. of the children. He believes them to be due not to contagion, but a general pathologic condition; they are quite common in anemic girls whose conjunctiva are not in the least inflamed. Prolonged fomentation of the eye, as in the treatment of iritis, etc., will also produce them. The difference between them and trachoma granules is essential.



**Intermittent Immobility of the Pupils in Tabes.**

EICHHORST (*Deut. med. Wochenschr.*, June 9, 1898.) describes two cases he has had the opportunity of examining from time to time. Out of 103 cases of tabes, only two showed the intermittent character of the light reflex, in all the rest the absence of the light reflex was a constant symptom. The first case was that of a woman, aged 38, who had syphilis, and now suffered from typical tabes dorsalis, loss of knee-jerks, ataxy, and lightning pains. In Sept., 1893, the right pupil was larger than the left, they both reacted to light and accommodation. In Jan., 1894, it was noticed that both pupils had lost the light reflex, but reacted well to accommodation. During the next month the light reflex remained absent. He lost sight of the patient for two years, but had the opportunity of examining her again in Feb., 1896; the light reflex had returned; all the other symptoms remained the same. The pupils continued to react to light until June 22, 1896; on this day the light reflex was absent and continued to be so for the next four days; another return of the light reflex occurred, lasting ten days. On Dec. 17, 1896, the pupils were immovable to light, and since this date they have continued to be so.

The second case was that of a woman, aged 38, who had a suspicious history of syphilis, but this was not as clear as in the first case. She had well marked signs of tabes, and had been under observation for six years. In 1891 the pupils were equal and reacted to light and accommodation slowly. In 1892 the patient suffered greatly from lightning pains, which were relieved by salicylates, the pupils now reacted more promptly to light than they had done in the previous year. In 1895 a perforating ulcer of the foot commenced, and the patient was worse in every way. The left pupil was immobile to light, whilst the right was mobile. In 1897 the general symptoms were getting worse. The right pupil was larger than the left, both reacted to light and accommodation.

**Extraction of a Splinter of Iron from the Eye by Means of the Electro-Magnet.**

VULLERS (*Deut. med. Wochenschr.*, July 16, 1898,) reports four cases in which splinters of steel were extracted



from the eyeball by means of the electro-magnet. He attributes the good result obtained in each case to the use of the small Hirschberg electro-magnet, which is a much more exact instrument than that of Haab's.

**Operation for Elevating an Eyelid that Had Dropped in Consequence of a Gunshot Wound in the Temporal Region.**

HIRSCHBERG, J. (*Deut. med. Wochenschr.*, September 29, 1898), reports five cases of ptosis, in which he performed Birnbocher's operation with results that exceeded expectation. In the after treatment care must be taken that the eye-lashes do not irritate the cornea, and to this end the lids may be closed by superficial sutures. After the dressing is removed the lashes may be sealed to the skin by collodion and cold cream, applied to the eye to prevent friction. The efficiency of this operation depends, first, upon transference of the strength of the muscles of the brow, by means of the sutures, to the paralyzed muscles of the upper lid; and, second, upon insuring elevation of the lid by means of the firm attachment of the eyebrow to the underlying bone.

**Complete External Ophthalmoplegia, With Paralysis of the Facial Nerve.**

VON FROGSTEIN and KEMPNER (*Deut. med. Wochenschr.*, August 25, 1898,) report the case of a man examined when 47 years of age, who at the age of 15 developed paralysis of both eyes, without obvious cause. There was bilateral ptosis. Both eyes were prominent, and neither could be moved. The patient had a shallow ulcer in the lower part of the right cornea; sensation was unimpaired; the pupils were normal; vision was somewhat reduced. The eye grounds presented no abnormality. The muscles supplied by the upper branch of the right facial nerve were also completely paralyzed; all the other muscles of the face and the special senses were intact. The conditions are believed to be probably due to degeneration of the nucleus of the third nerve, with involvement also of the adjacent nucleus of the upper branch of the facial, which, it is assumed, is situated in the position assigned to it by Mendel. No history of syphilis, either hereditary

or acquired, could be elicited. It is concluded that the pathologic nature of the process was a primary nuclear degeneration or sclerosis. The prognosis is, of course, unfavorable.

#### **Double Chancre of the Lids.**

HELBORN, of v. Michel's clinic (*Münch. med. Wochenschr.*, May 24, 1898), reports a case in a boy aged 11. On the upper and lower lids there was a semi-circular raised ulcer, with a yellowish-gray slough. When the eyelids were closed the two halves made almost a complete circle. On the lower lid, in addition, there was a hard swelling in connection with the tarsal cartilage, but separately from the ulcer. The gland in front of the ear and also one beneath the jaw were enlarged. The ulcers healed in about four weeks; six months later there was an iritis in the left eye. There were also two masses of granulation tissue in the neighborhood of the lig. pectinatum. A week later an opacity appeared on the posterior wall of the cornea, and an indurated nodule in the tissue of the left upper eyelid. A slight opacity was then noticed in the vitreous, and there was also commencing optic neuritis. Inunction treatment was commenced a month later. The patient ultimately made a good recovery. A double chancre of the lids is very rare. The origin of the disease was traced in this case to the boy sleeping with an elder sister, who had mucous tubercles in the mouth and other evidence of syphilis. The disease was, in all probability, conveyed by kissing.

The granulation swellings in the iris should be looked upon as papules of the second stage. The vitreous did not prevent the characteristic opacity usually seen in syphilis. An acute syphilitic neuritis occurs usually only within 1 to 5 years. The earlier it appears the better the prognosis, as in this case. The syphilitic manifestations remained here confined to the eyes, showing thus a local lessened resistance.

#### **A Case of Spontaneous Hemorrhage from the Iris and Ciliary Body in the Anterior Chamber in a Case of Leukemia.**

SORGER (*Münch. med. Wochenschr.*, August 30, 1898,) reports a case of leukemia that was complicated by hem-

orrhage into the anterior chamber of the right eye. Other methods of absorbing the blood having failed, an incision was made through the cornea, and the anterior chamber drained with some difficulty. It was then seen that the blood vessels of the ciliary body and iris were tortuous and many of them bled freely, necessitating subsequent evacuation. The bleeding finally stopped, but the patient died in a few months.

#### **Glaucoma in Aphakia.**

HIRSCH, CAMILL (*Wien. Klin. Wochenschr.*, Sept. 28, 1898), has observed glaucoma following cataract extraction in four cases, which he describes in detail. The relationship between extraction of the lens and glaucoma is not as yet determined. Hirsch thinks that such eyes are predisposed to glaucoma. It is well to make a broad (so-called glaucoma,) iridectomy in all hyperopic cataractous eyes of old people, where the anterior chamber is shallow, instead of the usual small iridectomy. He is skeptical regarding the prognosis.

#### **Examination of the Eyes in Cretinism and Related Conditions.**

HITSCHMANN, R. (*Wien. Klin. Wochenschr.*, July 7, 1898), has made a series of observations upon the condition of the eyes in cretins and dwarfs, and publishes an exhaustive table recording the condition found in the eyes of 58 patients of one or the other class. He found epicanthus relatively more common among cretins, and he explained its presence by the pathologic peculiarity of the skin and the conformation of the nose. Deformity of the eyelids, especially the upper lid, was another peculiarity observed, due probably to swelling and thickening of the conjunctiva, the appearance being not dissimilar to the picture of "ptosis adiposa." The space between the lids was quite narrow, the ability to elevate the lids present only in a moderate degree. In many cases the conjunctiva was the seat of a chronic catarrhal condition, probably the result of those disturbances in the tear ducts to which people with saddle-nose are more or less disposed. Anomalous positions of the eye, such as divergent strabismus, were seldom observed. A careful study was made

of the conditions of the eye-ground, as revealed with the ophthalmoscope. In addition to the detailed record of the cases examined, the article includes a general review of the subject of the text.

**A Case of Bilateral Ulcerating Gumma of the Eyelid.**

GRUDER, LEON, (*Wien. Klin. Wochenschr.*, September, 1898.) reports a case of a girl, 17 years of age, who presented on the right lower eyelid near the inner canthus, and on both lids of the left eye, reddened, painless swellings, each surrounded by an infiltrated area and with an ulcerated surface. The patient had passed through an attack of bilateral ophthalmia, but nothing definite could be determined with regard to it. The condition under consideration had begun three weeks previously, and had been treated with compresses saturated with some fluid furnished by a druggist. No cause could be discovered for the disease; syphilitic infection was denied, and there were no signs of syphilis on the entire body. From the indolent painless course of the process, with the presence of adenitis, and from the fact that it improved in a comparatively short time under treatment with compresses saturated with mercuric chlorid, a diagnosis of ulcerated gumma of the eyelid was made.

**Concerning Recurrent Traumatic Corneal Neuralgia.**

WICHERKIEWICZ. (*Wein. Klin. Wochenscher.*, September, 1898.) contends that there is a recurrent neuralgia of the cornea following a slight abrasion of the epithelium or merely a blow, and he cites two illustrative cases.

**A Case of Initial and Post-Initial Sclerosis of the Eyelid.**

GRUDER, LEON, (*Wein. Klin. Wochenschr.*, October 13, 1898.) As to the relative frequency of syphilitic disease of the eye statistics differ widely; so, too, is the exact proportion of chancres of the eye to other extra genital chancres undetermined. It may be stated that, next to the lips and fingers, the eye is the most common site for extra genital lesion. As the habits and social conditions of one country differ from those of another, and those of

large cities from those of country districts, great variation is to be expected in the statistics on the subject. The unusual frequency of primary chancre of the lid among the Russian peasantry is explained by the custom of licking the inflamed eye, or bathing it with urine. The most common site is on the lower lid; occasionally the upper lid is invaded, and more rarely the conjunctiva. The lesion itself does not differ from that seen elsewhere in the body; it is usually solitary, although a limited number of cases (7) are recorded in which there were two initial lesions. The contagion is transmitted indirectly by sponges, handkerchiefs and towels, and directly by kissing, licking and the like. The prognosis is generally not grave; small cicatrices will follow resolution but no gross lesions are to be anticipated. Enlargement of the preauricular glands has no special significance, as this is a complication met with in connection with numerous other ocular affections. Gruder reports a case of double chancre of the lid, in which the manner of transmission was believed to be through the kisses of a syphilitic child.

#### **The Physiological Action of the Brücke Muscle.**

FUKALA, V. (*Wein. Med. Presse*, No. 20, 21, 1898.) The author defines the function of the muscular structure described by F. E. Schultze as an arrangement of nature which has the property of preventing the eye from swelling out, especially in length. He cites as an analogue the network which surrounds a balloon or the net which is used over some atomizing bags to protect them from too much pressure and shows that this is of the same form as the longitudinal and vertical muscle bundles which lie round the stomach, intestines and urinary bladder.

The author names the portion of this muscle which has been called Brücke's, "the Contractus Bulbi." Upholding this opinion are the findings of Iwanoff who found that the meridional portion of the ciliary muscle was found in hyperopic eyes but very seldom in myopic.

#### **Modern Views on Trachoma.**

SCHULHOF (*Wien. Med. Presse.*, Nos. 24 and 25, 1898,) gives a very complete summary of recent work on the eti-

ology, pathology and treatment of trachoma. He quotes some striking figures as to its prevalence. In thirty Austrian counties there were in 1895 nearly 30,000 sufferers, while in the Russian army in 1896 the number of victims reached the almost incredible proportion of 62 per cent. The author summarises the results of his investigations in the following conclusions:—Its appearance is favored to a great extent by special conditions, such as race, locality, general nutrition and occupation. The actual natural history is not yet established; experiments and inoculations into animals have so far failed. The hypertrophy of the conjunctiva (granulation) is pathologically and histologically the principal characteristic of the morbid process. Hitherto the following have been generally accepted as the best means of treatment: Solution of silver nitrate and its substitute, argentamin, touching with copper sulphate, washing out with sublimate, the galvano-cautery, and in very obstinate cases more extreme measures, such as the use of jequirity, peritomy, and the removal of the hypertrophic folds. Among the newer remedies the following deserve a trial: guaiacal-glycerine, ichthyol, sozoiodol preparations and electrolysis. But the most important measure by far is prophylaxis, by means of regulation of the sanitary conditions and prevention of the spread from patient to patient.

# ABSTRACTS FROM RECENT FRENCH OPHTHALMIC LITERATURE.

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## **Total Combined Keratectomy, Followed by Sutures. Appli- cation of the Method.**

PANAS, Paris. (*Archives d'Ophthalmologie*, September, 1898.) For several years past, Panas has practically discontinued the operation of enucleation, substituting therefor his own method of total combined keratectomy. The advantages he claims are, that it gives a well rounded stump which permanently retains its motility and over which a glass eye may be worn with perfect comfort. Contrary to the teaching of many of the best authorities of this country that in such conditions as panophthalmitis not only the eye itself but as much as possible of the optic nerve should be removed to avoid the danger of sympathetic ophthalmitis, Panas performs his conservative operation even in such cases, experience having convinced him that he can do so with safety. His records show that during the past eight years he has performed the operation more than two hundred times.

The technique of the procedure is as follows: The patient is placed under the anesthetic influence of chloroform, the lids are held open with a speculum and the eye is steadied by means of a fixation forceps. A half curved Reverdin's needle is introduced through the sclerocorneal junction, passed back of the iris and lens, coming out at point opposite the point of entrance. The needle is then armed with a thread and allowed to remain in place. The

cornea is detached through out four-fifths of its circumference by a von Graefe knife introduced at the junction of its transparent and its semi-opaque portions, and partially excised by a few gentle saw-like movements. A couple of strokes with a scissors complete the section. The next step is to remove the iris—if this has not already been accomplished—on account of adhesions to the cornea. This is done by seizing it with a pair of forceps and forcibly tearing it loose. The crystalline lens is next removed by means of a scoop. In doing this, in order to avoid any pressure which would cause the escape of the vitreous humor the speculum is gently raised away from the globe, by an assistant. The last step is the closure of the wound. The Reverdin's needle, armed with its thread is now withdrawn and the suture made is tied. Two sutures one on each side of the first one are now inserted. To secure an even line the angles of the wound, which project slightly are trimmed off by means of the scissors thus practically completing the operation.

Ordinarily, there should not be any hemorrhage. The wound is washed with a one to twenty thousand strength solution of biniodide of mercury and dusted with iodoform. Over this, a dry dressing is applied, a thin layer of iodoform gauze being placed next to the lids. This dressing is allowed to remain in place for three days' time without being changed. At the end of a week's time, the sutures are removed, the bandage being continued for eight days longer.

Panas considers that the great field for this operation lies in those cases in which, owing to an anterior staphyloma, absolute chronic glaucoma, etc., there is total loss of vision accompanied with great pain.

#### **Researches on the Structure of the Ciliary Retina and the Origin of the Fibres of the Zone of Zinn.**

TERRIER, FELIX, Paris. (*Archives d'Ophthalmologie*, September, 1898.) Terrier finds that: I. The ciliary retina is formed of two layers of cells. The external, pigmented, is none other than pigmented epithelium of the retina which reaches to the pupillary border, while the cells which compose it, are visible only after depigmentation by the use of euchlorine.



The internal layer is formed of clear cylindrical cells, that are quite elongated in the flat portions and are cubical in the folded parts. In addition, there are a number of supporting fibres. At the level of the ora serrata, the healthy retina presents a sharp depression, while the internal granular layer and the supporting fibres alone persist, these being continued from this situation in connection with the layer of clear cells. This disposition, which is seen with difficulty in the adult human eye, is quite noticeable in the human fetus and in certain animals, especially the chicken. Just before its termination at the junction of the inferior third with the superior two-thirds of the posterior sides of the iridian angle, the clear cells become charged with pigment and may, for this reason become confounded with the pigmented layer.

The vitreous layer of the chorioid is continued beyond the ora serrata and forms the external limit of the ciliary retina, which it separates from the stroma of the chorioid.

The internal limiting membrane does not exist in the form of a basal membrane as is so commonly described. The supporting fibres traverse the two layers of the ciliary retina and are inserted outside in the vitreous layer of the chorioid. Internally, they terminate by an enlarged base, and form, by their reunion, an internal limiting membrane in those places in which where there are no zonular fibres. In other situations, they are confounded with these fibres, while the internal limiting membrane does not exist.

II. The fibres of the zonule all take their origin from the ciliary retina, a little in advance of the ora serrata. None come from the vitreous.

On a level with the ciliary retina. the zonular fibres do not stop at the basal membrane which is generally described as covering the free end of the clear cells and which in reality does not exist. Shortly before reaching these cells, they become broken into fine bunches of fibrils each of which penetrates into the interstices that are limited by two contiguous cells. They then traverse the pigmented layer and are inserted into the internal face of the vitreous layer of the chorioid, which, on the level, presents a series

of elevations and depressions that probably bear relation to the insertion of the zonular fibres.

III. The zonular fibres act similarly to supporting fibres which in place of terminating internally by means of an enlarged base forming the internal limiting layer of the retina, continue their course to become lost for the most part on the crystalline lens, some on the hyaloid membrane, and others on the ciliary retina itself.

IV. For these reasons, the zonular fibres may be considered as the fibres of Müller extremely elongated. The question is not definitely settled through the medium of embryology, but it seems difficult to trace them to the vitreous body: the two are very different in the adult, and even in the embryo there is nothing to suggest such a transformation. On the other hand they seem to develop from the periphery toward the centre; that is to say from the ciliary portion of the retina toward the crystalline lens and appear late (fourth month), while the vitreous humor has at that time already commenced to retract, while the peripheral portions are being condensed.

V. From this, it appears that the fibres of the zonula are ectodermic in origin, a theory which differs greatly from that which is generally conceded—that they arise from the vitreous humor:

#### **Remarks on Olly Collyria.**

SCRINI. (*Archives d'Ophthalmologie*, September, 1898.) Scrini's paper brings forward some additional experiments to these that have already been published by Panas, and which were reviewed in the October number of the "Annals." The author concludes that the basal salts of the alkaloids are in every instance better than either the oleates or the stearates. He has found that with the exception of the atropine none of the forms of the drugs that are mostly used in collyria remain in clear solution for any period of time.

#### **A Case of Filaria Loa (Male.)**

BERNARD, Paris. (*Archives d'Ophthalmologie*, September, 1898.) The patient whose case is reported by Ber-

nard had inhabited the Congo region for two years' time, It was during this period that he first felt the presence of the worm. On his return to France, several efforts were made to remove it, but each time a slight portion of the parasite remained. When seen by the author, the tissues of the eye presented no change other than a slight injection, but on raising the upper lid the parasite could be seen beneath the conjunctiva. It disappeared rapidly, giving to the patient the sensation of a thread being drawn under the skin. The worm never appeared on the right side, although it wandered freely around under the skin and conjunctiva of the left. After some effort, it was removed in its entirety. The specimen was twenty-two millimetres in length. It was sharp at one end and obtuse at the other. It was of the thickness of a violin string. The specimen was armed with five pair of cloacal, three pair of pre-cloacal, and two pair of postcloacal, papilla. The papilla diminished in size from front backward.

**Considerations of Eclamptic Amaurosis, Apropos of a New Case.**

SOURDILLE, NANTES. (*La Clinique Ophtalmologique*, October 10, 1898.) Sourdille reports the case of a woman, 34 years of age, pregnant for the first time, who developed the trouble named during the fifth month of pregnancy. The first symptoms noticed were a slight vertigo followed by dimness of vision and loss of accommodation. Two or three days later, there was a sudden and a complete loss of vision accompanied by repeated attacks of eclamptic convulsions, lasting for four days. At the end of this time the woman aborted. The amblyopia persisted for several days after this, when the vision commenced to slowly return. As there was considerable albumin in the urine, the patient was kept on milk diet. One month later she was first seen by the author. The vision of each eye equalled one-twelfth of normal. The pupil of the right eye was slightly dilated, while that of the left was normal. Both irides reacted to light. There were neither central scotomata nor any marked diminution of the fields of vision. The ophthalmoscope revealed nothing abnormal. The urine was by this time found to be free from albumin.

Some cerebral complications still existed in the form of hebetude, loss of memory, and impairment of intelligence. Under a treatment consisting of milk diet, iodide of sodium, the local application of electricity, and strychnia, which lasted for seven weeks' time, the patient was discharged. The vision of each eye had risen to one-third of normal, but there was still great weakness of the power of accommodation that persisted for another month. The author found his case to be quite typical in character. He considers the prognosis to be favorable, provided that the case be one of pure amblyopia. At times, the vision falls, after having been restored to normal, but this is due to a persistence of the albuminuria, the occurrence of a local hemorrhage, or the presence of optic atrophy.

#### **Researches on Protargol.**

WICKERKIEWICZ, (*La Clinique Ophtalmologique*, 10 Oct. 1898.) The author considers that in follicular and chronic granular conjunctivitis, protargol is inferior to some of the older drugs. He believes, however, that it stands alone in its influence on dacryocystitis and gonorrheal ophthalmia that are found both in the new born and in the adult

#### **A Case of Tumor of the Orbit. Extirpation Without Enucleation.**

BORSCH, Paris. (*La Clinique Ophtalmologique*, 25 September, 1898.) Borsch's patient, a child of eleven months, when first seen, was suffering from a myxoma of the orbit. The only pathological change to be detected in the eye itself, was a neuro-retinitis which was probably produced by a congestion that was dependent upon the growth. In this case it was decided to attempt the removal of the neoplasm without resorting to enucleation. In this, the author was successful. Two years after the operation, there was no recurrence of the condition, the child being healthy in every way.

#### **Two Cases of Disseminated Exudative Chorioiditis Treated by Thiosonamine.**

SUKER, Toledo, Ohio. (*La Clinique Ophtalmologique*, 25 September, 1898.) Suker holds that the action of this

drug in regard to the power to promote absorption is quite closely allied to that which is seen during the employment of iodide of potassium. It is on this ground that he uses it in the condition known as proliferative choroiditis. The improvement in vision is out of proportion to the changes that are seen in the diseased tissues. He gives the drug in ascending doses until he has reached a proportion of three grains a day, which dose with occasional interruptions of a few days each, he continues for months at a time. In the first case reported, he succeeded in a period of about three months in raising the vision of each eye from one-eighth of normal with correction, to two-thirds of normal. The glasses given at different times varied greatly. In the second case, vision was raised from one-fourth to one-half. In neither instance was there any trace of specific infection.

#### **Expulsive Intra-ocular Hemorrhage.**

GOLOVINE, Moscow. (*La Clinique Ophtalmologique*, 10 September, 1898.) The author after giving careful clinical reports of two examples of this trouble coming under his notice, makes a résumé of all the recorded cases that he has been able to find. In one of his own, too, an accident followed a cataract extraction, and in the other, the condition appeared as a complication of a Saemisch's operation. He presents a minute study of the microscopical pathology of the second case.

As a result of his studies, he says that the principal cause for these hemorrhages should be searched for in alterations in the vascular channels, which principally are of a senile character and particularly of a glaucomatic type. The external influences, operative, violent efforts, vomiting etc., come into play simply as precipitants of the attack. In those cases in which these alterations have attacked simply the larger vessels, the hemorrhage may come from the long arteries, in consequence of which, the microscope fails to reveal any change in the chorioid. On the other hand, however, if the smaller branches are altered, each chorioidal vessel is liable to give rise to a hemorrhage. It is easy to understand that under such conditions, microscopical research reveals a picture of pronounced changes in the chorioidal vessels.

In regard to prognosis, he does not consider the cases absolutely hopeless, and consequently, he counsels the plan of awaiting for developments before enucleation is performed, requiring at the same time, however, a most rigid antisepsis.

**Congenital Serous Cyst (Cystic Lymphangioma) of the Conjunctiva.**

SOURDILLE, Nantes. (*Archives d'Ophthalmologie*, November, 1898.) Sourdille claims the honor of adding a new member to the group of cysts of the conjunctiva, as indicated by the title of his paper. After his article had gone to press he discovered an account given recently by Snellen of a cyst which was removed, and the description of which seemed to tally exactly with that of the author's case.

**A Method of Plastic Closure of the Orbit After Exenteration.**

GOLOVINE, Moscow. (*Archives d'Ophthalmologie*, November, 1898.) Golovine suggests the application of his method to those cases of exenteration in which the eyelids are not removed. The procedure is as follows:

After the orbit is thoroughly cleaned, to do which it may be necessary to perform a canthotomy—though this should be avoided, if possible—he proceeds in the usual manner until about the third day. At this time, he dissects a deep flap from the temple. He then makes a short incision near the outer canthus of the eye, and at right angles to the edge of the lid. The skin between this line and the cavity of the orbit is then dissected free, forming a bridge of skin under which the first made flap is passed after being twisted on its pedicle. This flap is so placed that its raw surface is situated against the granulating surface of the orbit, the free skin surface being exposed. It is held in this position by a few stitches. The second flap, which is formed by making an incision downward and backward from the incision which forms the edge of the cutaneous bridge, is brought up to the exposed surface on the temple and stitched. After a few days' time the pedicle of the first flap is severed. The advantages thus gained are a more rapid closure of the wound than after

the old method of allowing the orbit to heal by granulation, and a lessening of the deformity which always follows such operations. The patient he operated on was able to wear an artificial eye in the cavity thus produced.

**Note on the Formation of Retinal Images by Rays that are Very Oblique to the Optical Axis.**

DRUAULT, Paris. (*Archives d'Ophthalmologie*, November, 1898.) Space will not permit of giving the results obtained by Druault in this series of experiments. His findings agree very closely with those of Donders and Groenouw. The author's measurements were made on the schematic eye and the dead and the living human eye.

**On the Operation for Strabismus.**

LANDOLT, Paris. (*Archives d'Ophthalmologie*, October, 1898.) In a communication made originally at the French Congress of Surgery, in 1898, Landolt dwells on the fact that strabismus is an affection of both eyes, and not of one only. Hence, the necessity of operating upon both eyes. He speaks of the number of operations which, owing to the paralysis of the other muscle, are complete failures, or else give but very unsatisfactory results. He suggests the possibility of performing tendonous transplantation, thus making other muscles than the one that is paralyzed do the work. In closing, he reiterates the statement so frequently made by him as to the value of stereoscopic exercise in bringing about binocular vision after operation for strabismus.

**A Contribution to the Study of those Lesions of the Optic Nerve that Are Caused by Intra-Cranial Neoplasms.**

ROCHON-DUVIGNEAUD and STANCULEANU, Paris. (*Archives d'Ophthalmologie*, October, 1898.) This is a most interesting paper on account of the rather unusual advantages for study which the case presented. The patient was a young woman, pregnant at the time of admission at the hospital, and who died, after being delivered *in extremis* of a seven months' infant.

Intense headache, with vomiting, were the first symptom noted in the disease. When the patient was admit-



ted to the hospital she was in a "typhoid condition," minus the fever, and remained so for over a month. Examination of the chest revealed tuberculosis in the early stages. There was also aortic insufficiency.

One month after admission to the hospital, the visual acuity began to diminish, and the ophthalmoscope showed that the optic nerve heads were swollen and projecting, giving a typical picture of one of the ocular signs of cerebral tumor. One month later, hemi-chorea appeared. At the same time, another examination with the ophthalmoscope revealed the commencement of a double optic atrophy. Four weeks later, the vision of the patient was reduced to light-perception only.

It was at this period that labor pains set in. The woman was delivered by means of forceps, dying shortly after.

Autopsy proved the presence of tuberculosis of the lungs, and revealed what is particularly interesting from an ophthalmological standpoint, a small tumor at the base of the cerebellum; the ventricles and the inter-membranous spaces being filled with a serous fluid.

The microscope showed that there was an apparent excess of the neuroglial cells in the optic nerve, that the myelin was slightly atrophied, and that the axis cylinders were either partially or wholly destroyed—this atrophy being the greatest in the neighborhood of the chiasm.

The authors attribute the degeneration to two influences: The toxic effect of the serum, which is to be regarded as a pathological condition, and hence more or less toxic to the normal tissues; and the pressure exerted by the cranial portion of the nerve sheath on the edematous nerve—a process of strangulation.

#### **Strabismus in Hereditary Syphilitics.**

ANTONELLI, Paris. (*Archives d'Ophtalmologie*, October, 1898.) According to this author, many cases of strabismus are due to infections and toxins that are inherited from the parents. Of these infections, syphilis is the one that is most frequently found. Fifty per cent. of these patients squint in childhood.



This dyscrasia, he says, may cause strabismus through several channels. There may be trouble in the sensorial portion of the apparatus governing binocular vision, the visual acuity of each eye at the same time being up to the standard. A second cause is in the motor apparatus itself, or in the connections between this and the sensorial organs. The intercurrent paralysis of accommodation of Javal, which interfere with the reflex of convergence, may be included in this group. The third grouping includes the manifest pathological conditions of the eye itself, such as astigmatism and rudimentary alterations of the fundus oculi. In each eye the reflex of direction may be present, but the reflex of convergence is lacking because there is no contemporaneous excitation that is sufficiently and equally good on both sides.

**Primary Glaucoma in the Orient.**

BISTIS, J. (*Annales d'Oculistique*, September, 1898.) Bistis denies the observation made by Bitzos, that glaucoma in the Orient is of a milder type than that seen in the Occident, a type that proceeds insidiously and is never associated with great rise in tension or extreme pain. The author holds to the belief that glaucoma in the East is like glaucoma in the West. He accepts Abadie's theory in regard to the sympathetic origin of the disease.

**A Case of Infectious Erysipelas of the Eyelids, Rapidly Followed by Fatal Result.**

GOURLAY, SAINT-BRIEUC. (*Annales d'Oculistique*, September, 1898.) Gourlay's case is interesting, principally on account of the rarity of the affection in this part of the body. Death is said to have been produced by the action of the infectious principle on the "bulb." A rather striking circumstance in this case was that the second eye was infected, not by the spreading of the disease over the skin, for this did not at first occur, but by way of the deeper structures, possibly the optic nerve or its sheath.

**A Case of Hereditary Syphilis of the Eye in the Second Generation, Accompanied by Multiple Congenital Anomalies.**

STRZEMINSKI, [Wilna. (*Recueil d'Ophtalmologie*, October, 1898.) The patient, a boy ten years of age, was

brought to consult Strzeminski on account of failing vision, which had been noticed for several days previously. Throughout his life, vision had been better in subdued than in bright lights. In each eye, there were two diametrically opposed colobomata of the irides which had practically changed the pupil into slits. The irides reacted freely to light and accommodation, and to mydriatics and miotics. Apparently there was an absence of the external recti muscles. In each eye, the ophthalmoscope revealed pigmentary degeneration of the retina. In the right one, there was also an areolar chorioiditis, with floating opacities in the vitreous chamber. The optic disks which were normal, were surrounded by areas of pigment. Both eyes were hypermetropically astigmatic. Correction brought the vision of the right eye to four-tenths of normal and that of the left eye to normal. There was a commencing diminution in the field of vision of the left eye. Color-perception was poor. There was also a right-sided deafness and a paralysis of the right side of the tongue. These were all noticed shortly after the birth of the child. The mental condition of the patient was below the average, his memory being quite poor. He stuttered somewhat, and suffered from attacks of vertigo.

His grandfather presented the signs of hereditary syphilis. No signs of acquired syphilis were to be found on either the father or the mother of the patient. A diagnosis of hereditary syphilis in the second generation was made and mercurial inunctions were advised, but refused by the father. Four months later, the child again appeared at the clinic, this time suffering in addition from a parenchymatous keratitis which was accompanied by an iritis in both eyes. Tuberculosis being excluded, a positive diagnosis of hereditary syphilis was now made. The parents consenting, mercurial inunctions were commenced and continued energetically for a period of five months. Atropin was also used throughout the time of treatment and during the latter half of this period, an ointment of the yellow oxide of mercury was employed. This was followed by a two months' course of iodide of potassium. By the end of this time, the corneæ were practically clear. The right fundus was found to be in the same condition as the

left had been at the time of the first visit, the vitreous humor being cloudy. With the clearing of the cornea, the condition of the eye-grounds improved. Corrected visual acuity arose to normal, and a narrowing of the field of vision of the right eye disappeared. Three months later, there was no change.

A younger brother showed to a marked degree the same lesion as the patient under consideration.

A thorough study of this case in connection with the healthy condition of the mother, the history of acquired syphilis in the paternal grandfather, the distinct marks of hereditary syphilis without a trace of the acquired form in the father, and the similar reasons found on examination of the brother, led the author to the conviction that this was a true case of hereditary syphilis in the second generation.

#### **On the Prophylaxis Against Purulent Conjunctivitis of the New-Born.**

PECHIN. (*Recueil d'Ophthalmologie*, October, 1898.) Pechin prefaces his article by the statement that Europe contains at least thirty thousand blind who have lost their sight through the ravages of this disease. He disparages the Credé method of prophylaxis on account of the danger which he considers that it possesses of clouding the cornea. In the first place, he recommends a treatment of the vagina of the mother before confinement, and free washing of the eyes of the child after birth. The first care should be offered to the eyelids while waiting to tie the cord. This attention being given, the child is to be bathed, and the eyes are to be more carefully cleansed while the eyelids are kept open. For this purpose, the author uses distilled sterilized water. A little soap may be added to the water, but nothing else should be used. He considers that this simple method of prophylaxis is sufficient.

#### **Consideration on the Sympathetic Theory of Glaucoma.**

CAMPOS. (*Recul d'Ophthalmologie*, October, 1898.) In a brief article, Campos argues that the theory of Abadie—that certain forms of glaucoma are due to vaso-motor

dilatation (which theory has led that physician to recommend ablation of the superior cervical sympathetic ganglion in these cases), is incorrect. He brings forward arguments to show that cutting the sympathetic produces a vaso-motor dilatation and not a vaso-motor constriction which would be necessary to explain the cures that have been reported by Abadie and his disciples.

**The Treatment of Entropion and Trichiasis by Horizontal  
Linear Cauterization of the Eye-Lids.**

QUERENGHI, FRANCOIS. (*Annales d'Oculistique*, October, 1898.) The author has applied this method in over one hundred cases with almost uniformly gratifying results. Only in his early cases has he had any failures to report, and these he attributes to the lack of practice. For the operation, two assistants are required, one to steady the head of the patient, who is seated in a chair, and the other to hold a spatula which is introduced between the eyelid and the eyeball. The author uses the Paquelin cautery with a handle that is furnished with guards to allow his hand to be placed close to the end of the instrument, and with a short knife, that is made exceedingly sharp and that is curved slightly on the flat. Cocaine is the only anesthetic that is necessary except in the case of children. The incision in the eyelid extends from the inner to the outer canthus, and about four millimeters from the ciliary border, care being taken to avoid the lacrymal punctum. It should be made through the skin, the muscle, and partly through the cartilage in cases of entropion. When operating for the cure of trichiasis, the cartilage is not to be touched. A cold wet dressing is to be applied after the procedure. Three days later, the dressing is to be removed, the wound cleansed with a one to two thousand strength solution of bichloride of mercury, and any slough removed; after which the edges are to be united. As a rule, union is prompt. In some instances, healing is delayed, but it never extends beyond twelve or fourteen days. If more than one incision should be necessary, it is better to make the second after the first has healed.

**Ocular Troubles Observed in Diabetes.**

DIANOUX. (*Annales d'Oculistique*, October, 1898.) The author divides his cases into three types: 1, disturbances of the crystalline lens; 2, vascular lesions; 3, central scotomata.

In the first, he has never observed the fluctuations of vision in diabetic cataract, that have been cited by some authors. He believes that soft cataract develops only in the young who are suffering from acute or the pancreatic form of the disease, and that the condition appears constantly with an emaciation and drying of the skin. It never occurs except in diabetes. He believes that in the aged this disease has probably no effect on the lens. He has found that senile cataract is easily operated on, and that the disease is not a contraindication. The case is different with soft cataract; here death frequently results from pulmonary apoplexy in a few hours after the procedure. If this does not occur, the benefit of the vision does not as a rule last for more than twelve or fifteen months' time.

Vascular lesions occur only in the aged and are due to rupture of the veins or capillaries; and never in the author's experience to arterial rupture. Such hemorrhages usually precede death from cerebral softening. If they are mixed with the exudative types of retinitis, renal disease is probably also present; in which cases, fatal uremic symptoms usually appear in a few months' time. Central scotomata progress steadily. In them, the color-sense for red and green is lost, but the visual field is not contracted. These blind areas never disappear. Death in such cases, ordinarily results from coma.

**Glaucoma and Ophthalmic Migraine.**

TROUSSEAU, Paris. (*Annales d'Oculistique*, October, 1898.) Trousseau refers to a case that has been recently reported by Parisotti (*Annales d'Oculistique*, May, 1898, and abstracted in these ANNALS for July, 1898.), which was finally diagnosed as a case of "false glaucoma." He reports a similar instance which was characterized by sudden attacks of blindness and the sensation of "seeing fireworks." The author, making diagnosis of ophthalmic migraine, quieted the patient's fears and advised

him to lead a more hygienic life than he was then doing, and to consult his family physician as to his general health. The persistence of the attacks finally lead Trousseau to doubt the correctness of his diagnosis, and the patient was asked to present himself during one of the exacerbations. This he did, when it was found that the conjunctiva was slightly injected, the cornea was of a greenish tinge and slightly anesthetic, the pupil was normal, tension was somewhat elevated, and a view of the fundus was unattainable (this latter symptom he believing to be due to the condition of the cornea). A diagnosis of glaucoma was now made, and appropriate treatment was instituted with success. The attacks yielded and gradually became less frequent. Trousseau, not wishing to alarm his patient, who was of a very nervous disposition, did not tell him of the danger of his condition. The man went away on a journey, neglected the treatment and was seized with a typical attack of sub-acute glaucoma. He again consulted the author, who performed an iridectomy. Unfortunately, the visual acuity of the patient was partly reduced—a condition which persisted. In both of Parisotti's cases and the one under consideration, the exacerbation commenced before mealtime and disappeared after eating. This the author considers a frequent occurrence in glaucoma.

He believes this to be one of a type of cases for which he proposes the name of "Glaucoma of the Migrainic Type." He insists upon the necessity of a careful examination of such cases, particularly during the attacks.

#### **A Contribution to the Bacteriological Study of Phlyctenular Conjunctivitis.**

MICHEL, Bordeaux. (*Annales d'Oculistique*, October, 1898.) Michel has made cultures and inoculations from 18 cases. Ten times he found the staphylococcus pyogenes aureus, and seven times the pyogenes albus was seen. Of the ten cases, the germ was found pure in nine instances, and mixed with a form of diplobacillus in the other. Of the seven cases in which the pyogenes albus was present, the germ was pure in five instances, and mixed once with an unknown bacillus and once with the sarcina lutea.

Practically, inoculation of all the germs found caused the disease to appear in the eyes of rabbits, though numerous sterile irritants, when introduced into such eyes kept under such conditions (that is to say, when the animals were crowded together in dirty hutches and underfed,) did not. From these findings, the author arrives at the conclusions:

1. Phlyctenular conjunctivitis is a parasitical affection, and parasitical only. The essential cause is a microbe, the unhealthy condition of the patient acting merely as a predisposing cause.

2. Planting the contents of the phlyctenules on various culture media gives rise to colonies of diverse forms of microbes. The staphylococcus is by far the one that is most frequent.

3 The inoculation of the staphylococcus and of some, but not of all the other forms beneath the corneal epithelium of the rabbit, produces lesions that are analogous in appearance to the clinical type of phlyctenular conjunctivitis seen in the human subject.

4. The anatomo-pathological examination of the experimentally produced phlyctenules shows that in the case of man the lesion is not confined to the sub-epithelial space, but that it is accompanied by a superficial infiltration of the corneal tissue. This superficial infiltration in the case of man, as well as that in other animals, should be capable of producing the phlyctenulæ.

5. The phlyctenules seem to be caused by a reactive lesion of the organ against the microbes that have invaded the cornea.

#### **Calcareous Cataract.**

VALOIS, GEORGE. (*Recueil d'Ophthalmologie*, September, 1898.) A girl of 22 years of age presented herself on account of dense leucomata in both eyes. She had already been operated upon; an iridectomy in one eye and a partial one in the other. In the latter eye vision had steadily fallen ever since the operative interference. The pupil of this eye seemed to be filled with an opacification which Valois supposed to be a capsular cataract. An iridectomy being performed, it was discovered that the lens was present and



had degenerated into a calcareous mass. This was removed piecemeal, the fragment together forming a body the size of a normal lens. There remained a capsular cataract which the author needled a month later. With correcting glasses the vision obtained was  $\frac{4}{10}$  of normal. He offers as explanation of the formation of this cataract that the lens had probably been injured at the time of the first operation.

**The Use of Protargol and of the Salts of Silver in General and in Ocular Therapeutics.**

VALENCON, PHILIPPE. (*De l'Emploi du protargol et en general des sels d'argent en therapeutique oculaire.*—A. Davy, Paris.

Of the recent contributions to the list of ocular therapeutic agents probably none has been more widely discussed since the eucain preparations, than protargol. This salt, which is a proteinate of silver, bids fair to take rank as one of the most valuable agents in the hands of the ophthalmologist. Should this be the case, much credit will be due Valencon for the careful study of the drug that is presented in the above named monograph. As chief of Darier's ophthalmic clinic, he has had excellent facilities to study the action of the drug on a great number of patients. His method was to prescribe a five, or very rarely a ten per cent. solution. This was to be used by the patient at home, two drops at a time three times a day. In connection with this, a boracic acid wash was given with instructions to keep the eye clean. The patient was to report daily or twice daily at the clinic, when the conjunctiva was brushed with a twenty or thirty-three-and-a-third per cent. strength solution, as the condition might demand. In cases of the milder types, due to the bacillus of Weeks, the weaker solution sufficed to effect a cure in from three to five days's time. When, however, the gonococcus was present, the treatment was commenced with the employment of the weaker solution used once a day, this being replaced when necessary, by the stronger solution used twice a day. Should the eye not tolerate this strength, the author recommends that the home treatment with the five per cent strength solution should be alone used.



The conclusions derived from this work are given in the words of Darier; and we probably cannot do better than to transcribe them in full:

I. The salts of silver in general are the drugs of choice in those affections of the conjunctiva that are accompanied by hypersecretion. The first of these, the nitrate, has become almost a specific in such disturbances.

II. Argentamine, which has a penetrating power that is five times greater than that of the nitrate of silver, possesses real advantages over the latter drug.

III. Protargol has all the antiseptic properties of the two drugs just mentioned, at the same time being much less caustic in its action; a fact which should place it in the first rank of those agents that are suitable for so delicate an agent as the eye. It mixes thoroughly with the secretions of the conjunctiva, and does not give rise to false membranes and scars that are so frequently found after the use of the nitrate.

IV. Conjunctivitis that is due to the bacillus of Weeks, is radically cured in from three to five days' time by the employment of protargol.

V. Purulent conjunctivitis, dependent upon the gonococcus of Neisser, is very rapidly ameliorated and later cured by bi-daily brushings combined with repeated instillations of five per cent. strength collyriums of the drug. The secretion is in general arrested in eight days' time, while cure is effected, if the treatment be regularly continued, in fifteen days. In cases presenting an idiosyncrasy toward the drug, weak solutions only, but frequently repeated, can be employed.

VI. Conjunctivitis due to the bacillus of Morax appeared at first to be favorably influenced by protargol, as it had by the nitrate of silver, but the disease frequently returned yielding better to sulphate of zinc.

VII. A great number of cases of blepharo-conjunctivitis were ameliorated, and frequently even cured by the employment of protargol.

VIII. Dacryocystitis was found to be very favorably influenced by injections of five per cent. solutions of protargol.

IX. In granular conjunctivitis, argentamine is to be preferred to protargol, the latter drug not being a sufficient caustic to affect the granulations. H. A. R.

### **Egyptian Ophthalmia and Protergol.**

VALOIS, NACUM, Cairo. (*La Clinique Ophtalmologique* 10 November, 1898.) This writer informs us that in all cases of true Egyptian ophthalmia the gonococcus can be found. Early in the year there is usually an outbreak of a milder type which is due to the bacillus of Weeks. The principal locality for this disease is around Cairo. The summer is the season when it rages at its fiercest. Many patients suffer from annual attacks; in some of these instances, the trouble manifesting itself on the same day of each year. The first attack is generally the one that is the most severe. The course of the disease is very similar to that of gonorrheal ophthalmia as seen in France. In over four hundred cases of this disease in which Voilas used protargol he had surprisingly good results. He commenced with the fifty per cent. solutions for cauterization and ten per cent. solutions as a wash in connection with lukewarm boric acid solutions to be employed at the patient's home. The strength of the drug was diminished as the disease yielded. His report is favorable to the new salt.

### **Grave Bienorrhagic Ophthalmia in the Adult. Unsuccessful Use of Protargol.**

DUBARRY, Havre. (*La Clinique Ophtalmologique*, 10 November, 1898,) Following as it does the report by Valois, which is given above, this contribution is exceedingly interesting. Dubarry followed the method employed by Darier in every case, and yet during one week in which this drug was used in one case the patient become steadily worse. Finally becoming alarmed at the lack of success, the author replaced the drug by nitrate of silver, but not before the corneæ were almost totally destroyed. Under the influence of the nitrate, the disease was overcome. Several months' later the patient could begin to see sufficiently to be able to go about by himself.

**Through and Through Perforation of the Ocular Globe by Way of the Retro-Iridian Space by a Grain of Shot. Vision Saved.**

FOUCHARD. Manas, (*La Clinique Ophtalmologique*, 10 November, 1898. One of the most interesting cases of traumatism of the eye that has fallen under our notice for some time is that reported by Fouchard. The patient was shot by a gun fired by a trap arrangement which he accidentally sprang. Several grains of shot struck him in the face, one of these passing through the eyeball just back of the iris, which it wounded slightly during its passage. The anterior chamber filled with blood and iritis set in. When the media became sufficiently clear, it was found that there were numerous floating bodies situated in the vitreous humor. At the end of three weeks' time, the iritis had disappeared and the vitreous had almost entirely cleared. Vision was reduced to one-third of normal. There was a slight peripheral separation of the retina.

**Remarks on the Extraction of Various Forms of Cataract.**

TERSON, ALBERT, Paris. (*La Clinique Ophtalmologique*, 25 October, 1898.) Terson describes the method he employs in the extraction of dislocated cataracts, and of cataracts that are so swollen as to nearly or entirely efface the anterior chamber. He urges the necessity of measuring the length of the flap before operating. This length he gives as being between one-half and one-third of the size of the cornea. He also insists that the fixation forceps should be placed not below the cornea, but at the side almost opposite the point of puncture. In all cases of dislocated cataract, he recommends the fixation of the lens with a needle before opening the anterior chamber. If the anterior chamber be obliterated, the author makes a preliminary iridectomy, and in about two weeks' time he performs the extraction. He makes a small incision with the knife, enlarging it on both sides with a snip of a scissors. He says that this wound should be entirely closed within four days from the time of the procedure.

**Subconjunctival Injections of the Solution of Iodine and Iodide of Potassium in Ocular Therapeutics.**

SOURDILLE, Nantes. (*La Clinique Ophtalmologique*, October 25, 1898.) Sourdille speaks very highly of the

good results obtained by the injection of the following solution: One or two centigrammes of metallic iodine, 1 gramme of iodide of potassium, and 30 grammes of boiled distilled water.

He commences by injecting three to four drops every two or three days. As the patient becomes accustomed to the injections, the doses may be raised to ten or fifteen drops at a time.

#### **The Treatment of Purulent Ophthalmia of the New-born by Airol.**

VILLARD, Montpellier. (*La Clinique Ophtalmologique*. 25 November, 1898. Villard has employed airol in ten cases of the disease above mentioned. He has had excellent results. Of these, three were benign, six were quite bad, and the tenth was very grave and complicated with ulceration of the cornæ. He used the drug in the form of two or three per cent. strength ointments applied to the eyes two or three times a day. The first effect was to increase the secretion and to cause the lids to swell, at the same time giving the patient considerable pain. This reaction lasted about an hour, and with the exception of that seen in the fourth case, the pain passed off in about fifteen minutes' time. On everting the lids at the end of an hour, a thin yellowish membrane covering the conjunctiva could be found. This was readily removed. After a few days' treatment, combined with the use of a wash of permanganate of potassium, the secretion of pus and muco-pus was arrested. When this stage was reached, the drug was found to have lost its efficacy, and was replaced by one of the older and better known materials.

#### **On the Ocular Pseudo-Neoplasm Developed After the Extraction of Cataract.**

BISTIS, Constantinople, (*La Clinique Ophtalmologique*, November 25, 1898.) Bistis adds an additional case to the previous list of eight of these growths (if so they may be called,) and hazards another theory as to their nature and origin. According to this belief, they consist in a serofibrous exudation from the vessels of the ciliary body that is

due to an infection of the wound without marked inflammatory symptoms.

**Sudden Paralysis of the Ciliary Muscle of Asthenopic Organ.**

JACQUEAU, (*La Clinique Ophtalmologique*, November 25, 1898,) This case was found in a man sixty-two years of age, who had always enjoyed good health and who worked without difficulty as a locksmith. The patient suddenly began to complain of headache following the use of his eyes. A week later he practically became nearly blind. In this condition, he presented himself at the clinic. The eye showed no lesion other than a hypermetropia of four and a half diopters as determined by the ophthalmoscope. On placing a correcting lens in front of his eyes, his vision was found to be equal to five-sevenths of normal. For near-work three and a half diopters' strength were added, by which means the patient was enabled to read. Previous to his failure of vision, he had worn a reading glass of two and a half diopters' strength. In a short time, the patient's symptoms were relieved, although he could not discard his glasses. The trouble the author says, was evidently a paralysis of accommodation produced by an exhaustion of the ciliary muscle. It is noteworthy that the iris reacted normally throughout.

**The Ocular Manifestations of Leprosy.**

JEASELME E. and MORAX, V., Paris, (*Annales d'Oculistique*, November, 1898.) Space does not permit of a comprehensive review of this most interesting paper. The authors state, that when the disease attacks the eye-lids it usually begins in the region of the eye-brow, or else at the free edge of the lid, these two spots being frequently found to be diseased while the intervening skin is in a healthy condition. Paralysis of the orbicularis muscle has also been noted.

The conjunctiva is never found to be the seat of the primary ocular lesion, but when it is diseased, the condition is due to an extension from the episcleral region. The anterior portion of the sclera in the region of the episcleral tissue is the point which is first infected in the eye. Particularly is this marked at the point at which the anterior

ciliary vessels pass through. This among other symptoms, leads the writers to believe that the infection has taken place partly through the blood-vessels, although the lymphatics probably also act as transmission agents, as shown by the involvement of the cornea. When the cornea becomes one of the seats of the disease it is very apt to get anesthetic. Leprous keratitis is of two kinds. The first is seen in the form of a pseudoplasm which is due to an accumulation of round or spindle shaped cells that are situated beneath the epithelium. The second which is rarely found, is seen in the form of an interstitial inflammation of the cornea resembling in some ways the interstitial keratitis that is due to hereditary syphilis. It always, however, becomes steadily worse.

Vascularization of the cornea with small erosions also occurs. Should an iritis appear, it is usually seen to be of the simple serous variety, though in two cases that were examined, groups of small nodules could be found encircling the free edge of the membrane. Exudative iritis is also found and has a tendency to pass on to the development of a buphthalmos. (In other instances, large leprous masses at the root of the iris can be observed.) The ciliary body is usually involved. Although those who have studied this disease have not been so successful in discovering lesions of the retina and the chorioid as in the other tissues, these organs were nevertheless found at times to be infiltrated. In all the cases in which the tissues were examined microscopically, Hansen's bacillus was found.

#### **Metritic Iritis.**

MAZET, Marseilles. (*Annales d'Oculistique*, November, 1898.) Mazet gives the clinical history of two patients who were affected with an iritis which he attributed to an endometritis. In each instance, the inflammation of the iris declared itself within a few days after menstruation had commenced, and in each case, the patient suffered from an endometritis which periodically became aggravated during each menstrual epoch. In one case there was considerable pus in the anterior chamber. Both women were otherwise healthy and in neither could any trace of any hereditary infection be found. The author agrees with deWecker,

that these cases were due to an absorption of toxic agents or principles by the denuded mucous membrane of the uterus, for some reason or other this situation being the point of least resistance. He says, that if it be true as Cohn claims to have observed, that the ciliary veins are congested at the menstrual epoch, this observation strengthens the theory. Both of Mazet's cases yielded readily to treatment of the eye and the uterine conditions.

**The Purse-string-Suturing of the Conjunctiva in Cases of Extended Ulcers of the Cornea.**

VALUDE, Paris. (*Annales d'Oculistique*, November, 1898.) Valude has operated very successfully on a large sluggish ulcer of the cornea which was due to trachoma, and which had refused to yield to the usual methods of treatment. He circumcised the cornea, and then dissected back the conjunctiva almost as far as the ocular equator. In this way, he obtained a large free flap. This he drew together over the cornea by a purse-string suture. Fifteen days later, he opened the sac thus formed by a series of crucial incisions. The conjunctiva was found to be free from the unaffected portions of the cornea, but it was adherent to the diseased portions that remained well covered.

ABSTRACTS FROM CURRENT AMERICAN AND  
ENGLISH OPHTHALMOLOGICAL  
LITERATURE.

BY CHARLES H. MAY, M. D.,

NEW YORK.

**Report of a Committee of the Ophthalmological Society of the United Kingdom Appointed in March, 1896, to Consider the Relative Value of Simple Excision of the Eyeball, and the Operations Which have Been Substituted for It.**

(*Trans. of the Ophthalm. Soc. of the United Kingdom, 1898.*) The committee collected evidence respecting the following operations:

1. Simple excision of the eyeball from Tenon's capsule, the tendons of the muscle being cut close to the globe.
2. Evisceration with or without insertion of an artificial globe into the empty sclerotic.
3. The insertion of an artificial globe into Tenon's capsule after the removal of the eyeball.
4. Abscission.
5. Optico-ciliary neurotomy.
6. Optico-ciliary neurectomy.

The report commences with a review of the history of these various operative procedures. The rest and greater part of the report is divided into the following chapters each corresponding to one of the questions submitted to them. These were:

1. *What are the relative risks of meningitis?*
2. *What are the relative risks of sympathetic inflammation?*
3. *What are the disadvantages of the several operations under consideration, apart from the risks from meningitis and sympathetic inflammation?*
4. *What are the special advantages with relation to the wearing of an artificial eye?*



5. *What points are there to be emphasized in the technique of the operations under consideration?*

6. *To what extent should the choice of operations depend upon the nature of the case?*

The committee consisted of W. Adams Frost (chairman), Arthur H. Benson, Ernest Clarke, John Griffith, Priestley Smith, Treacher Collins (Secretary) and Thomas H. Bickerton. Mr. Bickerton did not sign the report as a whole, owing to his disagreement in regard to question 6, though he was in practical agreement with the rest of the report.

1. *What are the relative risks of meningitis?* The first point to be determined was the frequency of meningitis after simple excision. The largest number of cases of which details were available, were those from Moorfield's hospital in which between 1861 and 1896 there had been 6,876 cases of excision. Prior to 1882 there was no fatal case of meningitis, but since then there had been seven, or 0.1018 per cent. of the total number of excisions since 1861. Other figures dealing with nearly four thousand other cases are given. Many of these were suppurative cases, and yet there was no death from meningitis. Adding all these figures together, it follows that in 10,734 cases of simple excision of the eyeball there were seven fatal meningitis cases. Attention is called to the fact that meningitis may arise independently of excision, and cases are cited to prove this. "There can be no doubt that meningitis may be set up by the operation of excision, but it is highly probable that, in a certain proportion of the cases in which patients have died from meningitis after excision of a suppurating eye, the meningitis began before the operation, and that the patient would have died from it had no operation been performed."

Coming to the question whether excision is more liable to be followed by meningitis in any special class of cases than in others, mention is made of Graefe's advice of many years ago, that the excision of suppurating eyes should be avoided on the ground that meningitis was likely to follow. Nettleship collected the records of thirty cases of meningitis after excision, in twenty-seven of which the state of the eye at the time of the operation was mentioned; in fourteen or one-half of these cases there was one stage

or another of suppurative panophthalmitis, often recent, occasionally of several weeks' standing. In all of the seven cases which occurred at Moorfields, the excised eye was affected with a suppurative inflammation.

"We have not received notes or found records of any case of death from meningitis after the operations of abscision, optico-ciliary neurotomy or neurectomy, evisceration with insertion of an artificial globe into the sclerotic, or after excision with the insertion of an artificial globe into Tenon's capsule. Yet seeing that meningitis after excision is such an exceedingly rare event, it may be that sufficient experience of these operations has not yet been obtained to permit of it being definitely stated that they are less prone than excision to be followed by meningitis. It seems probable that none of these operations have been performed more than 1,000 times."

*"2. What are the relative risks of sympathetic inflammation?"*

In dealing with this question two separate points present themselves for consideration: 1. Is it possible that any of these operations themselves should start sympathetic inflammation? 2. What is the relative value of these different operations in preventing sympathetic inflammation when performed on eyes with lesions which would be likely to excite it?

A committee of this Society on Sympathetic Ophthalmitis reported: "We found thirty cases in which genuine sympathetic ophthalmitis set in after excision, and six others the sympathetic nature of which is doubtful." In considering this group of cases they discussed whether the sympathetic disease was excited by the injured eye, or by the operation for its removal. They pointed out that if the disease were due to the excision, we should expect to meet occasionally with cases in which the disease in the second eye came on a long time after the operation, and sometimes after removal of eyes which otherwise would not have been likely to produce sympathetic mischief. They quote four cases in which a long interval elapsed between the excision and the onset of the disease in the other eye, to only two of which they do not see that any exception can be taken, unless it be assumed that the disease in

the second eye was spontaneous. They only found one case in which the disease came on after the removal of an eye, which would not have been likely to cause sympathetic ophthalmitis; and that was a case in which the first eye was lost by spontaneous inflammation.

“We have not found a record of any case of sympathetic ophthalmitis following evisceration without the insertion of an artificial globe (Grae’s operation.).

We have collected records of five cases of sympathetic ophthalmitis after the operation of evisceration and the introduction of an artificial globe into the emptied sclerotic (Mules’ operation.)” The histories of these five cases are given and continuing, the committee report: “It will be noticed that in each of these cases the eye upon which the operation of evisceration was performed had received a perforating wound such as would be likely to excite sympathetic mischief. We have no notes of any cases in which the second eye became inflamed after the operation of evisceration had been performed after an affection unlikely to produce disease.

The time which elapsed between the receipt of injury and the onset of the sympathetic trouble was as follows: Case 1, 5 weeks; case 2, four months; case 3, six weeks; case 4, about six weeks; case 5, six and a half weeks. Therefore the sympathetic inflammation might well in each case be attributed to the injury. If, on the other hand, the sympathetic inflammation be considered the direct outcome of the operation itself, the interval between the lesion and the onset of the trouble in the other eye would be unusually short, namely: In case 1, seventeen days; case 2, three weeks; case 3, seventeen days; case 4, less than three weeks; and case 5, twenty-five days. Not so short, however, as to make it impossible to regard the operation as the exciting cause.

Whether evisceration is as efficacious in the prevention of sympathetic ophthalmitis as excision, can only be definitely determined by statistics gathered from a larger number of cases than we have been able to collect.

Anderson Critchett, Argyll Robertson and Nettleship, at the June meeting of 1897, of this Society, all bore witness to the extremely low percentage of cases of sympa-

thetic inflammation after excision. It has been ascertained that at the Moorfield's Hospital, from 1892 to 1896 inclusive, there were 1,596 eyes excised, and in only one of these cases is it known that sympathetic inflammation subsequently developed. Granting that Mules' operation has now been performed 1,000 times, which so far as we can ascertain seems a fair estimate, we have, it will be seen, been able to collect five cases in which inflammation believed to be sympathetic followed.

Mules was led to adopt evisceration as an operation for the prevention of sympathetic inflammation on the assumption that the disease was set up by infecting particles travelling from a septic uveitis in the exciting eye. He argued that removal of the contents of the globe under aseptic conditions before infecting particles of the uveitis had begun to travel ought to prevent sympathetic ophthalmitis. Assuming the theory that the transmission of some morbid substance from one eye to the other is the cause of sympathetic inflammation to be true, the only way of explaining the occurrence of sympathetic ophthalmitis after excision, is to regard the morbid substance as having passed the point at which the structure or structures by which it travels were divided at the time of operation.

The clinical fact that the interval between the excision and appearance of sympathetic ophthalmitis is very short is in keeping with this view. In evisceration though the source of the morbid substance, *viz*, the uvual tract, may be entirely removed, the track by which it travels is not divided so far back as in excision. So that if this theory of sympathetic inflammation we started with be correct, we should expect to find that in cases in which more than two weeks had elapsed between the receipt of the wound and the operation, there would be a larger percentage in which sympathetic ophthalmitis came on after evisceration than after excision.

The committee of this Society on sympathetic ophthalmitis, in discussing the length of interval between the lesion of the exciting eye and the earliest appearance of sympathetic inflammation, say they have found eighteen genuine cases in which the interval was not more than four weeks; in six of these the interval was four weeks;

in six, three weeks; in two, between two and three weeks; whilst in only four was it two weeks or less."

In the cases quoted, the interval between the operation of evisceration and the onset of the symptoms in the other eye, was not longer than that which has been recorded as existing between the excision of the eye and the onset of undoubted sympathetic ophthalmia in the other. It is noteworthy moreover, that in all these five cases in which sympathetic ophthalmitis followed an evisceration, the sympathizing eye ultimately recovered completely, as is usually the case when sympathetic disease occurs after excision.

We have received notes of two cases in which sympathetic ophthalmitis occurred after excision and the introduction of a glass globe into Tenon's capsule. (The histories of these two cases are given.) We have thought it well to record these cases in this report. In the first case, however, the interval between the operation and the onset of the inflammation in the sympathizing eye, *viz.*: three days, is so short that we do not think it had anything to do with the onset of the mischief. In the second case, as the inflammation in the excised eye was apparently spontaneous, and not the result of perforating injury, that in the second eye may have been of like nature. We do not think there is any evidence that the introduction of an artificial globe into Tenon's capsule diminishes the immunity from sympathetic ophthalmitis afforded by excision. We have found records of cases of sympathetic ophthalmitis occurring after the operations of optico-neurotomy and neurectomy. (The histories of eight cases of this sort are given.) In all these cases of sympathetic ophthalmitis after optico-ciliary neurotomy or neurectomy, the eye upon which the operation was performed had received an injury, itself likely to produce sympathetic disease. We have not found a record, or received notes of any case, of sympathetic ophthalmitis following either of these operations when the eye was not suffering from an affection itself likely to produce it. There is, therefore, no definite proof that either of these operations is itself capable of exciting sympathetic inflammation, though it is possible that this has occurred in some of the above cases.

In three of these cases the interval between the operation and the onset of inflammation in the second eye, *viz*, seventeen days, sixteen days, and five days respectively, is so short as to make it in the last case impossible, and in the other two very improbable, that the operation had to do with its excitation. In two of these cases moreover, weakness of the second eye was noticed before the operation. In other cases in which the sympathetic disease commenced at varying intervals from two and a half years to ten weeks after the operation, the possibility of the operation having excited cannot be excluded.

In contrasting the relative immunity from sympathetic disease afforded by optico-ciliary neurotomy or neurectomy and excision, we find that out of the immense number of excisions which have been performed, the committee of this Society on sympathetic ophthalmitis could only discover two undoubted cases where an interval of more than eight weeks had elapsed between the excision and the occurrence of inflammation in the second eye. Out of the comparatively small number of optico-ciliary neurotomies and neurectomies which have been performed, we have been able to discover five undoubted cases in which the sympathetic disease did not make its appearance until ten weeks or longer after the operation, two after neurotomy, and three after neurectomy.

Through the occurrence of sympathetic ophthalmitis after abscision is referred to in most of the recent textbooks on eye diseases, only a few actual cases can be found recorded (brief abstracts of the notes of three cases are given). Eyes with staphylomatous and leucomatous corneæ are not, when left to themselves, prone to excite sympathetic ophthalmitis, whereas wounds of the ciliary region are known to do so frequently. In Critchett's operation of abscision the ciliary body is penetrated by needles and sutures are inserted in that region. Should sympathetic inflammation occur after such an operation, performed on an eye with anterior staphyloma, it would seem *a priori* likely that the disease in the second eye had been excited by the operation rather than by the original disease. In the first case quoted the sutures were only passed through the conjunctiva.

The time which elapsed between the operation and the onset of the sympathetic mischief in these three cases, *viz.*, from four to six weeks, is such that the affection of the second eye might well be attributed to the operation. It is not longer, however, than that which has been known to elaps between excision and the onset of sympathetic inflammation."

(*To be continued.*)

#### **Recent Experiences In Operations for Secondary Cataract.**

KNAPP, HERMANN, New York. (*Archives of Ophth.* September, 1898.) "Until the beginning of May, 1898, I could say that I had neither lost an eye, nor permanently injured one, by discission of a secondary cataract, an operation I have practiced during the last 25 years on many hundreds of eyes. I can say so no longer; for an eye, the lens of which had been removed successfully and with restoration of good sight by simple extraction, lost its sight by the advent of acute glaucoma following discission of the somewhat opaque capsule, glaucoma which failed to cure by operation in contrast to all similar cases that had previously come under my care. This sad occurrence determines me to publish the patient's history without delay, together with all the other operations for secondary cataract I have performed during the nine months beginning with October, 1897."

The history of this case is given in detail together with that of a parallel case which occurred not long after but in which the glaucoma was promptly cured by an iridec-tomy. There was another case, slight glaucoma, which recovered upon use of mydriatics.

In a supplementary note further results in the first case are given. This supplementary examination showed *that the eye had not been lost*; its condition had improved very markedly since the paper was written, and with proper cylindrical correction and complete clearing of the vitreous it promised 20-50 or better vision; the V. was then 20-200, reading J.4.

"From October, 1897, to June, 1898, inclusive, I made 152 extractions of primary cataract, and 70 operations for secondary cataract. Among the latter were 64 discissions



with the knife-needle, 1 cyst-iridectomy, and five operations with the forceps-scissors. The latter are comparatively new to me. In former years I made some of these operations with DeWecker's forceps-scissors. They yielded no satisfactory results, and I gave them up in favor of iridectomy and cyst-iridectomy. At present, the operative technique being so much improved, and asepsis making cutting within the eye comparatively harmless, I have taken them up again. The five operations in this series have proved quite satisfactory, considering that they were made on eyes much more affected than those in which discission is indicated.

As to discission, the results have been very gratifying; 64 were improved, in 5 the vision remained the same, one (the case detailed—see also supplementary note in which good vision is reported) was a sad failure, good sight being, it seems, hopelessly lost. The visual results are recorded from the last examination made, but these in the majority of cases were only the first examinations, *i. e.*, when the patients left the hospital, which means, at an average, six or seven days after the operation. At that time the vitreous has not yet so much cleared up as it will have later. I state that all the cases I operated on are included, no distinction being made between complicated and uncomplicated cases."

A table is added which gives details of each case. "The series shows that the discission of secondary cataract, as performed with a knife-needle, through the cornea, has continued to show a high degree of safety and efficiency."

"Does glaucoma which discission produces in one or two per cent. of aphakial eyes occur only in eyes predisposed to glaucoma? There is no proof for this supposition. We see it in young and in old persons and in all constitutions.

"Has the character of the secondary cataract and the manner of attacking it anything to do with its development? I think this is the main factor. Tough capsules are cut with difficulty, often they are not cut at all but torn off the ciliary processes. It is in precisely such cases that others and myself have noticed the setting in of glaucoma. In my experience those operations have shown the greatest



reaction—glaucoma and cyclitis—in which I endeavored to cut dense cords or membranes in the region of the extraction scar, the most vulnerable part of the aphakial eye. I have therefore avoided disturbing the cicatricial tissue in that region. . . . I find that I obtain the clearest pupil with the least reaction when I make a clean **T** or **X** shaped incision. This can be done in almost all cases with a perfect knife-needle, by good artificial illumination." For the cure of artificial glaucoma, Dr. Knapp regards iridectomy as the most reliable remedy. Next a table is given, showing the visual acuteness before and after the secondary operation in 70 eyes. Collectively these 70 eyes showed more than twice the amount of sight which they had before the second operation. The average sight after the second operation is computed as 20-50; before the second operation it was on the average not quite 1-5.

**On the Treatment of Strabismus, With Special Reference to the Adoption of Advancements for Convergent Strabismus.**

FERGUS, FREELAND, M. D., Glasg'ow. (*Glasgow Medical Journal*, September, 1898.) The writer does not attempt to discuss the treatment of all forms of strabismus but adds the weight of his experience to the recently published reports of others, in favor of advancement for convergent strabismus in place of the commonly performed operation of tenotomy. He classifies examples of squint into five different types and again into absolute and relative forms, explaining each variety and giving examples. He explains that the treatment of any form of strabismus has for its ideal either the restoration of a disturbed binocular fixation, or else a cosmetic result, giving instances in which the latter result only is possible. He insists upon the very important necessity of examining each case thoroughly—of carefully measuring the angle of the squint, of thoroughly investigating the field of fixation and the function of convergence. He believes that, had these matters been inquired into, the death knell of tenotomies, except under special circumstances, would have been sounded long before Landolt's time.

Dr. Fergus narrows the discussion by selecting convergent strabismus as it occurs with hypermetropia or hyper-

metropic astigmatism and gives a brief summary of the views which Donders first advanced on this subject.

Arriving at the subject of treatment, he divides this into: (1) Orthoptic; (2) optical; (3) operative.

1. "The chief difficulty which the surgeon experiences in the scientific treatment of squint is the impatience of his patients, or more especially of their guardians. A young child has strabismus, and his parents or other guardians becomes anxious that the defect should be put straight without further delay. Thus, the surgeon is rarely allowed to expend that care and time over the treatment which is requisite for orthoptic exercises. Moreover, there is always the pressure of school work, so that it is next to impossible to have a young person subjugated to this important line of treatment. In young adults, however, something of the kind should always be attempted. No statement of details can be given here, but in general terms it may be said that the lines to be followed are, first, by regular and patient exercises to excite what vision is possible in the squinting and amblyopic eye. If we succeed in this, the next effort should be devoted to arousing in the patient the sense of binocular vision, *i. e.*, the sense of perspective. Probably the only method of doing so is by long and patient exercise with a good stereoscope. Any well devised stereoscope will do. The one which I personally use is that of Dr. Doyne, but I do not think it has any special advantages over any other form. For the early exercises it is well to put on one side of the stereoscope the upper half of a picture, and on the other the lower half, so that the patient's efforts may be directed to combining them into one. Whenever he can manage to do so, ordinary photorgaphs such as are commonly used for stereoscopic purposes may be substituted, in order to arouse the patient's sense of the third dimension. These exercises are always of great use, and are specially beneficial as an adjunct to any surgical treatment.

2. As regards optical treatment, all errors of refraction must, of course, be corrected. This division also includes proper exercises by prisms. Where, as a result of our efforts to encourage vision in the squinting eye, a diplopia has been established, they are of use in helping the patien

to unite the double images into one. A course of mydriatics with correction of refractive errors will, in certain cases restore binocular vision.

3. Within the last few years my own opinion, in common with that of many better able to form one, has undergone a radical change. For a considerable time I have operated on all cases of divergent squint, by advancement. In my earlier days I operated on a few occasions for divergent squint or insufficiency of the internal recti by tenotomy alone. For many years, however, I have, in common with most others, invariably operated on divergent squint, absolute or relative, by advancement of one or both internal recti muscles. For some time back I have operated on convergent squint only by the same method, and have given up tenotomies almost entirely. My endeavor is to justify, if possible, this important change. I shall try to show:—

1, That the operation is more rational than tenotomy; 2, that it is easily performed; 3, that the results are quite as successful; 4, that it does not produce the disfiguration similar to that produced by tenotomy.

1. Whatever theory may be held as to the origin of concomitant squint, careful examination of the field of fixation with an ordinary perimeter will show the ultimate result that in most cases the external recti muscles are extremely defective in function. As a rule, the internal recti do not seem to have a stronger action than normal. As a matter of fact, in a very fair proportion of cases they are weaker than usual. Yet, in most cases, the strength of the internal recti does not differ from what is generally found. This is not merely an opinion, but is a matter of fact. Now, if an attempt is made to rectify this state of affairs by tenotomy, apparent straightness is only obtained when the converging function is made as weak as the diverging was before. Not till then will the eyes easily assume the parallel position for distance, although it is freely admitted that this parallelism for distance can be obtained under favorable circumstances. That it is so in some cases is, however, more good luck than good guidance. But what then? Most acts of accurate vision require a certain amount of convergence. By tenotomy, to a very large extent indeed, this power of convergence

is destroyed. You have not strengthened the diverging power by sacrificing the converging; all you have done is to weaken the convergence. Hence, what is known as the positive part of the range of convergence is much lessened in extent, and as natural and necessary sequence the near point of binocular fixation is at a considerable distance from the eyes. A heterophoria is artificially established. There is no possibility of binocular fixation for near distances. \* \* \*

If, then, by tenotomy you have largely reduced this reserve, or annihilated it altogether, comfortable binocular vision is no longer possible.

Under such circumstances it is not at all infrequent to find that the patient gives up the effort and allows one of his eyes, by preference the one less useful for sight, to deviate outward. This deviation at first may only be for near objects, but ultimately it becomes constant for all distances. The previous convergence is, in the worst cases, turned into an absolute divergence. Therefore, from tenotomy there may be one or two distressing results:

(a) The convergence may be so weakened that the binocular fixation at the ordinary near-at-hand distance is impossible; (b) it may be so destroyed that there is absolute divergence.

Facts confirm this theory. Within the last year I have carefully examined a number of cases which had in previous years been operated on by myself, or others, for concomitant squint by the method of tenotomy. In only two of them have I found a satisfactory near point of binocular fixation; in all the others the positive range of convergence was much diminished, and in some it was absent altogether.

In such cases it is usual to say that the operation has been a bad one; that the surgeon has cut too much. In some cases this charge may be true, but in the majority it is not. The absolute or relative divergence is nothing less or more than the necessary physiological sequence of the altered conditions of the internal recti. Particularly is this ultimate divergence liable to occur in cases which have been operated under the influence of a general anaesthetic. In these cases the surgeon is apt to divide the

tendon of the muscle too freely, as also its attachments to the capsule of Tenon. In very many cases, operated on under the influence of chloroform or ether, I have found a marked divergence. It is, so far as my experience goes, the exception to find the eyes straight even for distant vision.

There is, however, another side to the question. In many cases a tenotomy does not bring the eyes even approximately straight for distance, but still leaves a very marked convergence. That is a clinical fact which all who are not merest novices will admit. In many such cases the explanation is that the diverging power is so weak that even by tenotomy the convergence cannot be weakened to such an extent as to allow the external recti to pull the eyeballs into parallel position for distant fixation. Many of these cases are explained by a marked amblyopia in one eye, which involves that there is no impulse toward binocular fixation. In my student days it was said that certain cases of convergent squint were associated with weakness of the external rectus muscle of the squinting eye, and even at that time it was a rule laid down for our guidance that unless the external rectus could draw the eye beyond the middle line advancement of the external should be performed with tenotomy of the internal.

In a very fair proportion of cases a tenotomy does not seem to make any very marked difference in the relative positions of the eyes.

From the above it will be apparent that tenotomies are somewhat haphazard experiments, which sometimes succeed but at other times do not.

The operation by advancement on the other hand, is more rational, in so far as it does not attack a function which is more or less in a normal condition, but is directed against the abnormality of function. It is an effort to restore impaired function, not to impair healthy function. That statement by itself goes a long way to prove this operation to be more rational than tenotomy. But, further, in the vast majority of cases there is no reason to apprehend a resulting divergence. I have performed the operation in a large number of cases, and in one only has there been a slight divergence. That arose from my carelessness, and a little more strict attention to the rules which I have formulated

for my own guidance would have prevented this mishap. The case was that of a young lady who had been operated on by tenotomy for convergent squint in childhood. When I saw her, notwithstanding the tenotomy, there remained a convergent squint of not less than thirty degrees. The examination of the field of fixation showed great diminution both in the functions both of the internal and external recti.

As a rule, in concomitant squint both external recti must be advanced. This, however, ought not to be done when the convergence is deficient. In the particular case here referred to it unquestionably was, and that probably owing to the tenotomy which, however much it had impaired one internal rectus, had not even apparently removed the squint nor strengthened in any way the external recti muscles. In future, when the convergence is markedly defective I shall not advance both muscles at the same time. This is the only case in which there has been even the slightest divergence. But what of that? It does not matter; this slight divergence is due to the destroyed convergence, and all that is required to put it right is an advancement of the previously divided internal rectus. Speaking generally, however, I find it to be the rule that the operation should be performed on both external recti when the strabismus is severe, and when the internal recti are of nearly normal strength.

The advantages then which I claim for the operation are: (a) It does not, except from the carelessness of the operator, lead to divergence, and if it should, then the defect is easily remedied by advancement of the internal rectus; (b) it does not in the least interfere with the function of the internal recti, so that if their power was good before, it remains good and the patient may have an excellent range of convergence.

2. In the next place the operation is easily performed. So far as that goes, a few drops of cocain solution introduced into the capsule of Tendon render it all but painless, so that only for young children or for timid or nervous persons is a general anaesthetic required. The pain is reduced to a minimum if the patient during the operation is made to look in such a way as to relax thoroughly the muscle which is being operated upon. *Thus if the right*



*internal rectus is being attacked, the patient should be made to look to the right side.* This is an important point. That the operation is simplicity itself, is proved by the fact that an internal or external rectus muscle can with the utmost ease be advanced within a period of ten minutes. I have already described the manner in which I perform this operation in the *Ophthalmic Review*. The method which I follow differs but little from that detailed by Mr. Swanzy in his text book. The operation presents no difficulty whatever, nor is it any more dangerous than tenotomy. It is true that I have seen this latter operation followed by acute orbital cellulitis; not in my own hands, but in those of another surgeon. Such a result I have never seen with an advancement. In any case, however, in which there is redness of the conjunctiva, it is well to follow the rule which I have adopted in all doubtful cases, *viz*, to bandage the eye with sterilized cotton wool, and to cultivate any discharge collecting thereon before operating. By so doing the surgeon may be warned of danger.

Mention has already been made of the fact that a tenotomy sometimes does not seem in any material way to lessen the convergence. It is but right to state that occasionally with an advancement the same thing occurs. Even after the advancement of both external recti there may remain a slight convergence. Such cases are, however, rare. When this happens, if each eye is possessed of a fair amount of vision, our efforts should be directed to such orthoptic exercises as will stimulate the patient to binocular fixation. In most of these cases a perfect result so far as straightness of the eyes is concerned is ultimately attained, and let it be remarked that it is attained without any sacrifice of the power of convergence. When, therefore, the eyes become straight there is a possibility of the patient having a satisfactory near point of binocular fixation. As to the element of disfigurement, there can be no doubt as to which is the preferable operation. Almost invariably it is possible to tell by inspection an eye which has been submitted to tenotomy, for it presents three marked features, *viz*, the inner canthus is somewhat distended, the caruncle is shrunken, and there is a certain amount of protrusion of the eyeball. The eyeball may be said to rest at the base of a surrounding muscular one, which keeps it in position. If,

therefore, at any point this enclosing muscular sheath becomes detached, the eyeball tends at that point to protrude and as a matter of fact, does so. Sometimes this defect exists to such an extent as to give an appearance of one of the lesser degrees of exophthalmos. Such deformities are entirely unknown after advancements. There never is that dilatation of the inner canthus which is so troublesome in tenotomies, and for the avoidance of which so many proceedings have been devised without any satisfactory results. The only deformity which results from advancement is the formation of a small granuloma in the wound, which can easily be treated."

**Notes on Ophthalmic Bacteriology, Partly with Reference to Asepsis.**

GIFFORD, H., M. D., Omaha, Neb. (*Archives of Ophth.*, November, 1898.) This very interesting paper is based upon the results of over 200 experiments, some of which are described in detail. His experience in this direction has led the writer to the following conclusions:

"In summing up, it may be said that (1) these experiments not only confirm the common belief that ordinary methods fail to rid the conjunctival sac of germs, but show that some of the germs lie so deep under the epithelium or in the ducts of the glands that even small, freely exposed areas of the retrotarsal folds are not, as a rule, freed from them by vigorous wiping; this also applies to the mucous membrane of the lips. (2) So far, it has been found impossible to sterilize the roots of the lashes with any certainty. (3) The white pus coccus and the xerosis bacillus are probably always present in the normal sac; the former, at least, being often decidedly pathognomic; hence the necessity for operating rapidly and gently. (4) Although complete sterilization of the conjunctiva and lash roots is impossible, moderate wiping of both is decidedly advisable immediately before operations. (5) In estimating the number of germs in the conjunctival sac, no method should be depended on in which the membrane is not scraped rather firmly."

**Unilateral Albuminuric Retinitis; with Report of a Case.**

PYLE, WALTER L., A. M., M. D., Philadelphia, Pa. (*Philadelphia Med. Journal*, November, 1898.) The writer



reviews what has been written on the subject of unilateral albuminuric retinitis, gives the history of a case under his care and concludes that:

“Despite the foregoing theories and means of effecting proofs the important inference to be drawn from the history of these cases of unilateral albuminuric retinitis is to my mind the modification of the usual fatal prognosis. The prognostic significance of albuminuric retinitis is exceedingly bad. It is universally regarded as a death-signal, and statistics seem to support this belief. Baroness Possauer has studied the records of 67,000 patients in the Zurich clinic and the private practice of Professor Haab, and found that the men of the poorer classes invariably died within two years, while among women of the same grade the percentage of deaths was 68. Among private patients of the mortality was 59 per cent. for men, and 53 per cent. for women. Belt found that of 155 cases in private practice, collected from numerous sources, mostly by personal communication, 62 per cent. died within one year, 85 per cent. within two years. Of hospital cases, 85 per cent. died within one year, and 93 per cent. within two years. Of a total of 419 mixed cases, 72 per cent. died within one year, and 90 per cent. within two years.

“In the three recent unilateral cases reported in this country the patients were able to go about, and there were no serious signs indicating early death. Hasbrouck’s case was in a man of 62 attending to his daily business duties. My own patient is very comfortable and active so long as he is discreet in diet and drink. His average business day is 10 hours, and he is assiduous in his attendance.

“Further investigation by post mortem examination and separate catheterization of the ureters are necessary for definite conclusions relative to these cases. The points of importance suggested by a clinical and statistical study of the cases already reported are:

“(1) That the simple apoplectic form of albuminuric retinitis is the least dangerous to life; (2) that in albuminuric cases, in which the associate symptoms are not extremely severe and can be fairly controlled by medication and diet, retinitis is not a fatal sign as long as it remains unilateral.”

**The Tension of the Eye in Irido-Cyclitis.**

(Report of the October Meeting of the Ophth. Soc. of the United Kingdom. *British Medical Journal*, October 29, 1898.) This communication, which was presented by Captain H. Herbert, I. M. S., was based on observation of 144 eyes affected with irido-cyclitis. In the majority of attacks, more especially in the milder attacks, the tension was, as in simple hyperemia of the iris and ciliary body, reduced, the reduction lasting, as far as the evidence went, at least as long as any ciliary injection remained. In other cases a period of high tension of very variable duration came on. The high tension appeared to be due to blockage of the normal outlets from the anterior chamber, and the eyes chiefly affected were (1) those very severely attacked with copious exudation, and (2) eyes perhaps lightly attacked but predisposed to glaucoma, as shown by shallow anterior chamber in the sound fellow eye and by more or less advanced age of the patient. In these high tension cases the anterior chamber was deepened and the pupil slightly dilated. In the most intense inflammations the plus tension rapidly gave way to a softening, which might be permanent and which indicated atrophy of the ciliary body. The mild attacks, which were little removed from primary subacute glaucoma, were of interest because in difficulties in diagnosis and in treatment. There were no grounds for attributing high tension to cyclitis as distinguished from iritis.

**On the Course and Treatment of Spontaneous Detachment of the Retina.**

HORTSMANN, C., PROF., M. D., Berlin, Germany. (*Archives of Ophthalm.*, September, 1898.) "Detachment of the retina is found in .8 per cent. of all eye patients, and in 4.74 per cent, of all the blind. Its chief cause is cyclo-choroiditis with consecutive changes in the vitreous. The retina, in the opinion of the writer is separated from its support rather by the subretinal choroidal effusion than by the shrinkage by the vitreous and the contraction of cords. Myopic eyes furnish by far the greatest contingent. Nordenson noticed in all the eyes he examined—in Leber's Ophthalmological Laboratory—a laceration in the detached retina. I find ophthalmoscopically, under full dilatation

of the pupil, a laceration of the retina in about one-half of the cases. The prognosis is very unfavorable. Recoveries after operative procedures, not infrequently placed on record, are to be accepted with a good deal of reserve, as the majority of such cases have been published too hastily. It cannot, however, be doubted that permanent, complete, or more or less complete, recoveries occur both spontaneously and after operations.

From the year 1879 to 1896, 106 cases of spontaneous detachment (59 in men, 47 in women) have come to the notice of the author. In 9 cases the detachment was in both eyes. The intra-ocular tension was normal in 60 cases, diminished in 46, increased in none. Myopia was present in 84, E. in 6, H. in 2, not to be determined in 14.

Of the 106 cases 35 had been under observation before, during and for years after the advent of the detachment. So that their ultimate condition may be considered permanent; in the others the time of observation was not long enough for final judgment."

The final results of the 35 cases were:—

Spontaneous total recovery.....	5 cases
Re-attachment, but with a corresponding defect in F, 2	"
Temporary re-attachment, but relapse later.....	2
Detachment remaining partial.....	11
Detachment becoming total.....	15

Abridged histories of the 5 cases ending in spontaneous recovery are given. A review of these cases, in which the detached retina re-attached itself and resumed its function shows:

1. No prodromic symptoms except photopsia and obscuration of F.
2. The detachment was in the upper part, flat, never occupied the entire half of the retina, and did not include the yellow spot.
3. A laceration could not be discovered under dilatation of the pupil by the most attentive search.
4. The sub-retinal liquid did not sink, but was gradually absorbed in from two to ten months.
5. The detached portion of the retina resumed its function, but I should mention that it had never been entirely insensible.

6. The patients were mostly young, from 17 to 25; one 48 years old.

7. They all had a moderately large ( $\frac{1}{3}$ — $\frac{2}{3}$  P. D.), rather well defined crescent, and a moderate degree of (M 4.0—7.5). These conditions may be of value in framing the prognosis of a given case of detachment of the retina."

Other comments on these cases, and a review of the operative procedures which have been employed in this disease are given.

#### **A New Treatment for Trachoma—Preliminary Report.**

KEIPER, GEORGE F., A. M., M. D., Lafayette, Ind. (*The Ophthalmic Record*, October, 1898.)

"The treatment to which I desire to direct the ophthalmic world is that of interstitial electrolysis. Interstitial electrolysis is sometimes called metallic electrolysis. It has been used extensively in other parts of the body in the treatment of diseased conditions, but so far as I can find out, the application of the principle has never been made to trachoma. The feature of the treatment in general is to dissolve an electrode made of copper, iron, silver, zinc, etc., in the tissues by the means of the galvanic current, the soluble electrode being at the positive pole of the battery.

The solubility of a pure copper needle may be easily demonstrated by thrusting it into a piece of lean beef, and after connecting the needle to the positive pole and a dispersing electrode to the negative pole of the battery (applying it to the meat at some distance, if possible), turn on the current of electricity. After a time the meat, when cut open, will show an apple-green color. Chemical analysis shows this to be oxy-chloride of copper, a very powerful germicide. It will also be noted that it is diffused, and not confined to the location of the needle. It will also be noted that the diffusion is toward the negative dispersing electrode. This diffusion is known as cataphoresis.

Again, take an ordinary copper point, and put it at the positive pole of the battery; hold it on the surface of the meat and put a dispensing negative electrode close by, and the surface of the meat is discolored green, and the color is diffused into the tissue in the direction of the negative electrode. The chemical reaction is the same as in

the first instance. In this process oxygen, hydro-chloric acid and sulphuric acid are formed, which, uniting with the copper, form the oxy-chloride of copper. This is in a nascent state. For a fuller account of interstitial electrolysis and cataphoresis I would respectfully refer the reader to Bigelow's *International System of Electro-Therapeutics* or Scheppegegrell's new work on *Electricity in Diseases of the Nose, Throat and Ear*.

*Necessary Equipment.*—First. A good battery, say of 12 cells. No particular make is recommended, because the number of responsible manufacturers is very large, and their wares are first-class. Second. A milliamperemeter. No current should be passed through an eyelid without being carefully measured. It should be "dead heat," i. e., not influenced magnetically by the presence of steel or iron in its neighborhood. The Weston and Kenelly meters are the best. Third. Several pure copper electrodes. A copper needle electrode is tipped with the minutest quantity of silver to facilitate its introduction into the substance of the lid, though another variety (blunt and rounded—both illustrated,) is sufficient when applied to the surface of the conjunctiva of the everted lid. The electrodes should be made so that they will fit the universal handles. The dispersing electrode may be the ordinary hand carbon, one usually found with modern batteries.

*The Technique.*—A 4 per cent. solution of cocain is dropped into the eye, and again dropped in in 3 minutes. After 5 minutes the lids are sufficiently anesthetized for work. The patient is then given the dispersing electrode, connected to the negative pole of the battery, and may either hold it in his hand or may hold it on the back of his neck. The surgeon stands behind the patient, everts the affected lids, and with the blunt-pointed electrode rubs gently the conjunctival surface of the lid. The milliamperemeter should not register over 5 milliamperes during this procedure. Three milliamperes is generally all that the majority of patients can stand. The seance lasts for five minutes. After treatment, patients complain of some smarting and stinging, due, no doubt, to the deposit of oxy-chloride of copper within the substance of the lid

beyond the reach of the cocain. The treatment should be repeated twice weekly.

The copper needle may be thrust into each granulation, the current turned on, observing the same precaution as in the use of the blunt electrode.

The question may now be asked: To what forms and conditions of trachoma is this treatment applicable? To which may be replied, to those forms in which the copper sulphate pencil is usually applicable, and no others.

The cases upon which this form of treatment has been tried have so far progressed favorably, and the hint is thrown out that it may have a universal trial at the hands of all ophthalmologists possible, so that quickly may be determined its true value as a remedial agent in trachoma."

#### **The Removal of Cataract Without the Aid of the Knife.**

JENNINGS, J. ELLIS, St. Louis, Mo. (*Am. Journal of Ophthalm.*, November, 1898.) The writer investigated the claims made by the manufacturers of a preparation of cineraria maritima, as expressed in widely circulated advertisements, and found that "so far as he could learn there is no evidence to show that cineraria maritima is of any value as a curative agent in cataract, and from the action of the Walker Chemical Company they evidently are not anxious to have the drug properly tested.

#### **Cassaripe: A New Remedy for the Treatment of Corneal Ulcers and Other Infectious Diseases of the Eye.**

RISLEY, S. D., A. M., M. D., Philadelphia, Pa. (*Phila. Med. Journal*, October 29, 1898.) The writer expresses his satisfaction with the results obtained from the use of this remedy in ten per cent. ointment in a large series of cases of ulcers of the cornea and purulent disease of the conjunctiva. Cassaripe is the concentrated semi-solid juice of the cassava-plant of the tropics, and is used by the natives as preservative. The cassava belongs to the Euphorbiae. Dr. Risley gives the botanical history, and continuing says:

"In preparing the cassava, the poisonous expressed juice is put into water, the starch that it contains falls to the bottom, the water is poured off and the starch is placed on hot plates; this causes the starch grains to swell and burst,

forming the tapioca or Brazilian arrowroot of the shops. It is this poisonous juice or waste product from which the cassaripe is prepared; its poisonous properties being destroyed by the heat employed in its preparation. In preparing the cassaripe used for cooking purposes, especially in preserving meat, the coolies mix red pepper and spices with the cassava-juice, which they boil to the thickness of sirup. It is then cooled, bottled, and a quantity is exported. It is this cassaripe that makes the renowned West India pepper-pot. A teaspoon of it put into a vessel containing a number of pounds of mixed meats and boiled, will preserve the meat for an indefinite time, notwithstanding the perpetual summer of those tropical climes.

A few points with regard to the employment of cassaripe need to be emphasized. I have at no time used it stronger than in a ten per cent. ointment. It causes no irritation, however, and I see no objection to employing it in much stronger preparations. The ointment was applied freely between the lids, and the eye subjected to massage so as to distribute it thoroughly into the retrotarsal folds, and in the corneal cases, a protecting bandage was applied. When the patients were in the hospital, this was repeated three times daily; in the outdoor cases, morning and evening. No other treatment was employed except the use of atropin, and a wash of boric acid. In a few minutes after the application of the ointment in new cases, the discomfort was much diminished, and the improvement was usually rapid, as compared to other modes of treatment. In a case of ophthalmia neonatorum, the eye was thoroughly cleansed, the ointment of cassaripe applied, and a supply given to be used three times daily at home, after the usual wash. In two days the purulent discharge had entirely ceased. My observation seems to show cassaripe to be a powerful vegetable antiseptic, which promises to be a useful addition to our means of treating infectious forms of ocular disease."

**Holocain, a New Local Anesthetic with a Report on Its Use in Eye-Surgery.**

ELLETT, E. C., M. D., Memphis, Tenn., (*Phila. Med. Journal*, Nov. 26, 1898.) The writer gives a review of the facts now generally known concerning this new local anesthetic, and adds his own experiences in quite a number of eye operations of various kinds.



“Holcoain is sparingly soluble in cold water, but freely so in hot. I prepare it by agitation with hot water in a porcelain vessel, and pour it when cold into a bottle thoroughly cleansed with liquor potassae, and then with distilled water. It should not be prepared in glass vessels or stirred with a glass rod, for the alkali of the glass is dissolved out and precipitates the drug. The standard solution is 1 per cent. strength, and this solution is clear, stable and antiseptic. Randolph has demonstrated its inhibitive influence in bacterial growth, and pus-organisms are killed when exposed to the solution for a certain length of time (less than twenty-four hours). It is a protoplasmic poison, arresting ameboid movement, putrefaction and fermentation. If the solution becomes cloudy, filtering renders it clear, and boiling does not interfere with its activity. As it is itself antiseptic, it is not necessary to add an antiseptic or to sterilize it before using. When dropped into the eye it causes smarting, about like that caused by a five per cent. solution of cocain. In about one minute sufficient anesthesia of the surface is produced to permit the removal of a foreign body from the cornea. For operations, repeated instillations are necessary.

The effect of holocain is simply that of producing anesthesia. It does not affect the pupil or the accommodation. It does not contract the blood vessels, hence it penetrates better, and is more readily absorbed than cocain. The anesthesia of deep structures makes it the best anesthetic for iridectomy, as it permits the iris to be cut with absolutely no pain. It permits freer bleeding than cocain does. No toxic effects have been observed from dropping it into the eye, but hypodermic injections of the solution are said to cause clonic convulsions. It has no effect on intraocular tension, and there is no tendency to cause desiccation and exfoliation of the corneal epithelium. The anesthesia lasts about twenty minutes, but may, by repeated installation, be prolonged indefinitely with perfect safety. Holocain has more effect on inflamed surfaces than cocain. It may safely be put in the patient's hand for use in painful affections of the cornea.

I have used the drug somewhat extensively in my ophthalmic work during the past winter, and have performed the following operations under its influence: 11 cataract-



extractions, 11 iridectomies, 2 paracentesides of the cornea, 5 capsulotomies, 1 excision of prolapsed iris, 3 advancements of ocular muscles; several tenotomies and pterygium-operations, Knapp's rolling operation for trachoma, curetting corneal ulcers, opening chalazia, and a good many foreign bodies in the cornea and conjunctiva. I have also once broken up recent adhesions between the lid of the ball (symblepharon), and once attempted to extract a foreign body from the ball.

With two exceptions the anesthesia was perfect. In one of the cataract operations, I used an old solution, and was unable to secure profound anesthesia. I subsequently operated on this patient's other eye under holocain with complete success. The other case was one of iridectomy for chronic iritis. In this case I do not think any local anesthetic would have produced satisfactory anesthesia.

From the experience that these cases afford, I am well pleased with the action of holocain as a local anesthetic in eye-surgery, and I beg to repeat that the profound insensibility of the iris is especially gratifying. In all my operations the wounds have healed well. My instruments are sterilized by heat, and then by alcohol, and latterly formol, and the field of operation is, as far as practicable with mucous surfaces, rendered sterile.

I have not used holocain in the surgery of the nose and throat.

#### **Corneal Ulcers and Their Treatment.**

DUNN, PERCY, F. R. C. S. E., London, Eng.) (*The Lancet*, October 22, 1898. In the course of a post-graduate lecture on this subject, Mr. Dunn says the following concerning chinosol and eserine:

"In the foregoing remarks it will have been observed that I have more especially referred to two drugs—namely, chinosol and eserine—and about each of these I propose to add some further details. With regard to chinosol, concerning the advantages of which I have been repeatedly asked, I believe it to be the best antiseptic agent which is now in the market, and the longer I use it the more I prefer it, and the closer does it seem to me to fulfill the requirements of an ideal preparation of the kind. There are certain reasons for doubting whether in ophthalmic surgery the

principles of antisepticism are followed in the present day to the extent which their importance demands, and it is probable that the want of precision in this regard is partly due to the fact that among the multiplicity of antiseptic agents, there is none which has actually found general favor with ophthalmic surgeons. The perchloride of mercury, carbolic acid, boric acid, each has its drawbacks. Each is undoubtedly useful in its way, but neither the one nor the other has ever excited sufficient enthusiasm to cause thorough antiseptic principles to prevail in the domain of ophthalmology. The importance of this matter I believe to be such that I hold sympathetic ophthalmia would be an impossible complication in eye surgery were a wound of the ciliary region treated from the first with every antiseptic precaution. In fulfillment of this belief, I have treated within the past year several severe wounds in the dangerous zone, and in each case the eye made an excellent recovery. The results I attributed to the systematic antisepticism practiced by means of chinosol. The chemical name of this drug is potassium oxyquinoline sulphate and one of its chief advantages is the potency of its germicidal action—a fact which has been incontestably proved by bacteriological investigation. In addition, it is freely soluble in water and thus is handy for use. Moreover, it is non-caustic, does not injure the skin of the hands, does not coagulate albumen, and is non-hydroscopic. Again, it is one of the most economical preparations in the market, for owing to its potency only weak solutions of the drug are necessary. Mixed with 1 in 20 of boric acid it forms an admirable antiseptic ointment. It might, perhaps, seem that in saying all this I am praising chinosol inordinately. The fact, however, is that a lengthened experience has taught me that it is an excellent preparation, possessing advantages which in time must commend it to every operating surgeon. With respect to eserine, there is some unanimity of opinion among the authors of modern text-books on ophthalmic surgery that the drug should be avoided in the treatment of corneal ulcers. But my experience, as will have been gathered, does not accord with that view. On the other hand, I believe that the feeling which prevails against eserine in this connection has arisen in consequence of misconception

regarding its use. The great point to remember is to use it in a weak solution. The evil reputation of the drug has been mainly gained by employing solutions of greater strength than were necessary. Formerly eserine drops of the strength of four grains to an ounce of water used frequently to be prescribed, and then troublesome symptoms were nearly always induced. But it is seldom, if ever, necessary to resort to a higher strength than half-a-grain to an ounce solution, and for continuous installation in cases of chronic glaucoma even a less strength than this may be satisfactorily employed. Experience has fully demonstrated that there are certain forms of ulceration of the cornea which atropine fails to benefit but which, on the other hand, readily yield to eserine. To define what these particular forms are is a question which has been repeatedly asked in my out-patient room and the answer may here be given as follows: All sloughing, infective and vascular ulcers are best treated with eserine as well as, of course, those situated at the corneal margin at which perforation is threatening. This may be regarded as a broad rule for guidance, but there remains other cases concerning which no rule can be expressed in words. I have in my mind those cases of simple ulcer in which atropin has been used and apparently failed. In many of such I have found eserin to act like a charm, the injection of the globe quickly clearing up in consequence and the ulcer rapidly beginning to show improvement."

#### **Glioma of the Optic Nerve.**

BULLAR, J. F., M. B., Southampton, Eng., and MARSHALL, C. DEVEREUX, London, Eng. (Report of October, 1898, Meeting of Ophth. Society of the United Kingdom. *The Lancet*, October, 29, 1898.) This paper comprises observations upon a case of this sort which was operated upon by the writers. In the literature on the subject 130 cases of growths of the optic nerve were recorded, and the results of these showed that these tumors were of slow growth, but should be classed as malignant as they were liable to extend into the brain, although metastases had not been found in any case. The question of growths of all sorts found in the optic nerve were discussed, and although the different terms applied

to them were legion, yet Mr. Bullar and Mr. Marshall were strongly of opinion that the majority of them would fall into three groups: (1) Those originating in the neuroglia, which should be termed "gliomata;" (2) those originating in the dural sheath, "sarcomata;" and (3) those originating in the pial sheath, "endotheliomata." Mr. Bullar added that there had been no difficulty in removing the tumor. As soon as the conjunctival sac was opened the finger passed readily into the orbit and the tumor was easily defined; it was not necessary to clear out the orbit. The posterior section of the growth was made as close to the apex of the orbit as possible, but the tumor was cut through so that some portion of it must have been left behind. It would have been quite easy to remove the whole of it, leaving the eye behind, but in the stretched condition of all the parts he had not thought this advisable.

#### **The Pathology of Experimental Quinine Amblyopia.**

HOLDEN, A. WARD, New York. (*Arch. of Ophthal.*, November, 1898.) This paper gives the results of the microscopic examination of the eyes and parts of the brain and cord of nine dogs, to which toxic doses of quinine had been given, and which died or were killed at periods of from two hours to seven weeks after the first injection. The writer reviews the experiments of others in this direction and then gives a complete account of his experiments divided into paragraphs on symptoms and technique. Then follows a detailed account of the pathological changes of which the following is a résumé:

"Although the arteries were constricted, no histological changes were noticed in the vessels of the nerve or retina in any case, there being neither thickening of the vessel-walls nor proliferation of the endothelium. The thin-walled central vein of the optic nerve was often found to be empty and collapsed, and the delicate connective tissue about it, with its small vessels, owing to its being stretched and apparently increased in amount, sometimes suggested the appearance of an organized thrombus in the vein, but this same appearance was noted also in healthy dogs when the vein was empty.

"The pathological process, then, consists in a constriction of the retinal vessels, and particularly of the arteries,

followed by a highly albuminous serous exudation into the nerve-fibre layer, and a degeneration of the ganglion cells, together with their axis-cylinder processes which become the centripetal fibres of the optic nerve. There is no way of determining exactly how far the degeneration of the ganglion cells and their axis-cylinders may be due to the *indirect* toxic action of quinine in constricting the retinal vessels, and thus reducing their nutritive supply.

"Clinically it is found that amblyopia does not occur unless the injection of quinine produces marked constriction of the retinal arteries. The pathological changes are analogous to the degenerative changes which follow so-called retinitis of the inner layers. The retinal vessels nourish the six inner layers of the retina, the other layers being supplied by the choroidal vessels. Disorders of the retinal vessels cause degeneration of the inner layers, followed by an ascending atrophy of the optic nerve. This degeneration is seen most clearly after the complete stoppage of retinal circulation by embolism of the central artery, and after long-continued circulatory disturbances in cases of chronic glaucoma. The nerve fibres then all disappear, while the outer nuclear layer, the rods and cones, and the pigment epithelium, making up the outer layers of the retina, remain intact. With reduced, but not abolished, nutritive supply in quinine poisoning, the more delicate elements of the inner layers, that is, those most responsive to nutritive disturbances, namely, the nerve fibres and ganglion cells, break down and disappear; while the less delicate elements, the cells of the inner nuclear layer, are not perceptibly altered. From analogy it would seem justifiable to assume that the changes in the retina in quinine amblyopia are due chiefly to deficiency of nutritive supply, and, to a lesser degree, to alteration in the quality of the nutritive supply.

"These changes, however, cannot be regarded as being specific for, or solely characteristic of, quinine poisoning. No doubt many functional and organic disturbances of the circulatory system and many morbid conditions of the blood may give rise to similar pathological changes of the retina.

"The ultimate purpose of pathological investigation is, of course, to devise means of correcting pathological

changes, and it seemed to me that the present study could not be considered finished without some therapeutic experiments.

“TREATMENT.—The obvious therapeutic indication in quinine amblyopia is to bring about relaxation of the constricted vessels. For this purpose *de Bono* tried inhalations of nitrite of amyl some weeks after the toxic injection, but he obtained no improvement in vision. From the preceding examinations it was evident that irreparable damage is done to the retina in the first day or two after the injection, and that therapeutic efforts to be of value must be undertaken early. Furthermore, other remedies are known to be more lasting in their effects than the nitrite of amyl.”

**The Accommodation Theories of Helmholtz and Tscherning  
—Suggested Explanation of Their Discrepancy.**

SMITH, PRIESTLEY, MR. Birmingham, Eng., (Report of the Nov. Meeting of Ophth. Soc. of the United Kingdom, *British Med. Journal*, November 19, 1898.), Tscherning's theory is sharply opposed to the generally accepted explanation, but is based on very accurate observations. The question was whether the accommodation change in the lens depended on slackening of the zonula (Helmholtz) or on tightening (Tscherning). The anatomical arrangement of the parts concerned, and nearly all clinical and experimental facts, especially the observations of Hess, which showed that during strong accommodation the lens was often tremulous and displaced downward by gravity, strongly favored the former view. Tscherning, however, had proved that during accommodation the anterior lens surface changed from a globular to a hyperboloid curve—that is, tended to become conical—sharper at the center of the pupil, flattens toward the margin: and this, he contended, could only be caused by tightening of the zonula supplemented by internal resistance at the pole of the lens. The author's object was to show that this change could be equally well explained by slackening of the zonula. Let the case of an elastic circular hoop of steel first be taken. Traction at the sides transformed it into an ellipse; the curve flattened at the poles, and sharpened at the equator, and somewhere intermediate between these regions was a

point where no change took place. The position of this point and the general contour assumed by the hoop were governed by the varying resistance which it offered at different points. By modifying the resistance the curve could be modified at pleasure. Let the resistance at the pole be increased and the conical form observed by Tscherning was obtained; let it be increased toward the equator and the opposite effect, namely, a flattening at the pole and a sharpening of the curve elsewhere was obtained. Mr. Priestly Smith exhibited a model consisting of an elastic hoop of metal bent so that it assumed, in exaggerated form, the shape of the lens during accommodation, namely, the convexity of the anterior surface. It was strengthened with supplementary elastic strips in such a way that its resistance or rigidity increased progressively from the pole toward the equator. Traction at the equator, representing tightening of the zonula, reduced the conical to a spherical form. In the latter condition it represented the lens when subjected to the influence of the zonula; in the conical state it represented the accommodative change which occurred when the zonula was slackened by contraction of the ciliary muscle. It would be easy to theorize as to the resistance proper to the crystalline lens, and to show reason for supposing that the arrangement of the fibres was such as to render the resistance progressively greater toward the equator; but Mr. Priestly Smith said he would not go beyond demonstratable facts. What he desired to show was that the changes which Tscherning had demonstrated with such admirable skill and ingenuity were not incompatible with the theory of Helmholtz. To his mind they were explained more satisfactorily by this theory than by any other.

#### **The Utility of the Ophthalmometer.**

BULL, GEORGE J., Paris, France. (*The Ophthalm. Record*, December, 1898.) Dr. Bull discusses the uses and advantages of this instrument and concludes his paper with the following summary:

"As a result of my examination of the problems presented by this instrument, during the twelve years since I first joined Dr. Javal in his efforts to apply it in practical work, I am able to say that there are a few simple rules by



the application of which the measurements of the ophthalmometer may be made to furnish a most useful guide. Speaking broadly, it may be said that the total astigmatism is approximately equal to the amount indicated by the ophthalmometer, expressed as myopic astigmatism, combined with an inverse myopic astigmatism of 0.75D. It may be said that:

(1) When the corneal astigmatism is direct, and above 1D. we may expect total astigmatism to be also direct, but of lesser amount.

(2) When the corneal astigmatism is direct, and about 0.75 D, we may expect to find an almost total absence of astigmatism by subjective examination.

(3) When the corneal astigmatism is direct and 0.25 D, subjective examination will probably reveal astigmatism of about 0.50 D.

(4) When there is no corneal astigmatism we may expect to find by subjective examination an inverse astigmatism of about 0.75 D.

(5) When the corneal astigmatism is inverse we shall generally find, by subjective examination, a higher amount of inverse astigmatism.

(6) When the corneal astigmatism is oblique, and direct rather than inverse, a lower degree of astigmatism will be discovered by subjective examination. The reverse of this is true when the obliquity tends to bring the case into the class of inverse astigmatism.

(7) When the corneal astigmatism is oblique and of low degree, the meridian of greatest refraction of the whole eye commonly inclines more toward the horizontal than does the meridian of greatest corneal curvature.

(8) When the corneal astigmatism is of high degree the meridian of greatest corneal curvature coincides with the meridian of greatest refraction of the eye.

The above deductions are, of course, given only as approximations to the truth. The ophthalmometer should never be considered as a substitute for the subjective method of examination. It should be looked upon as a guide and as a check, enabling us to conduct the subjective examination on logical principles.



**The Ocular Evidences of Hysteria.**

WOOD, CASEY A., M. D., Chicago. (*Amer. Jour. Med'l Sciences*, January, 1899.) The writer points out the fact that the ocular evidences have not received the attention which they are entitled to in hysteria. He reviews and discusses the various eye-signs of hysteria, illustrated by the history of a number of examples, and concludes as follows:

"1. Most cases of hysteria present well-marked, easily-detected eye signs and symptoms.

"2. A few ocular symptoms, such as reversal of the relation of the color fields and the field for white, the tonic form of blepharospasm, spasm of accommodation and convergence, and pseudo-paralytic ptosis may be regarded as pathognomonic of hysteria.

"3. Defects of vision (in the absence of refractive errors, accommodative anomalies and fundus lesions,) are, generally speaking, hysterical if accompanied by photophobia and any form of blepharospasm.

"4. No examination of a patient for hysteria should be regarded as complete without considering the condition of his ocular apparatus.

"5. Where there is no conclusive external evidence of the neurosis present, the perimeter should be carefully used, the range of accommodation should be noted, and the ophthalmoscope employed.

"6. It should always be remembered that ocular hysteria is common in children and men.

"7. Organic disease (traumatism, especially,) of the eye may accompany purely functional disturbances of that organ."

**Why the Proportion of Blind in Cities Is Less than in the Country.**

HOWE, LUCIEN, M. D., Buffalo, N. Y. (*Amer. Jour. of Ophth.*, October, 1898.) As a result of his investigations of this subject, Dr. Howe has come to the following conclusions:

"1. Blindness is more frequent in the country than in the cities,

"2. On examining the different factors in the production of blindness, we find that these are either the same or made practically the same in city and country, with one exception. This exception is ophthalmia in infancy."

"3. A comparison of statements made by 38 county almshouses and by 35 obstetricians in the most populous State in the Union, indicates that decidedly less attention is given to guarding against ophthalmia of infancy, especially is the silver nitrate used less as a prophylactic in the country than in the cities."

"4. This tendency on the one hand to habitual neglect, or on the other hand to habitual use of such prophylaxis, is not only the most apparent cause of such variation—if, indeed, any other reasonable cause be discovered—but it probably accounts for the larger part of this difference in the distribution of the blind."

#### **Do Gross Pathologic Changes Occur In the Eye After Injuries to the Spinal Cord?**

ROY, DUNBAR, A. B., M. D., Atlanta, Ga. (*Phil. Med. Journal*, November 12, 1898.) The writer discusses this question and refers to numerous authorities and reported cases. His conclusions are:

"(1) That there is no anatomic connection between the eye and the spinal cord, with the exception of the sympathetic system, which, in itself, is reflex; (2) that injury to the spinal cord causes no pathologic change in the eye, except in the size of the pupil; (3) that spinal injury might affect the vaso-motor system, as evidenced in the eye by increased tension from dilatation of the blood vessels, but even this would be transitory; (4) when gross lesions do occur in both the spine and the eye, it is always the optic nerve that is affected, and even this association must be considered accidental and nowise in the light of cause and effect; (5) observation teaches that such symptoms as do appear in the eye after injury to the spine are purely subjective, and also very transitory."

#### **Congenital Iridoremia.**

FOSTER, MATTHEW LANCKTON, New York. (*Archives of Ophthalm.*, November, 1898.) Dr. Foster has written an

exhaustive paper upon this subject, including the theories of the causation of this condition, and has collected notes of all the cases published—184. He gives the history of one of the two cases seen by himself. The condition is defined as an absence of the entire iris, or of a portion too great to justify the application of the name coloboma. As a result of the tabulation of these 164 reported cases he found the following:

Sex is not a controlling factor, males and females being about equally represented. Forty-four per cent. of the cases occurred in families which furnished two or more examples, usually in different generations. The eyeballs were abnormal in 14 per cent. In 37 per cent. the cornea was abnormal. In 23 of the 164 cases there was an abnormality at the sclero-corneal junction; "a description applicable to all is a marginal cloudiness of the cornea, with or without a plexus of minute vessels. The iris was wholly absent in both eyes in 115 cases, and partially absent in both eyes in 34.

Lenticular disturbance was found very frequently; it existed in 107 cases, and in only 10 were both lenses normal. There was discoloration of the lens in 25 out of 37 cases, in which this part of the eye was noticed. The ciliary processes and bodies were mentioned 44 times, 32 times as not seen, 12 times as visible. The great number of corneal and lenticular opacities limited the number of cases in which an examination of the vitreous and fundus was possible. Fluidity and opacities of the vitreous were noted in 15 cases; the optic nerve was said to be normal in 20 cases and abnormal in 29; the retina normal in 22, and abnormal in 14; the choroid normal in 21 and abnormal in 12. Nystagmus was present in 69 cases, absent in 15, and not mentioned in 80.

Iridoremic eyes do not, as a rule, possess normal sensibility to light. Of the 104 cases tabulated, only six are said to have had severe photophobia; in 20 this was slight, and in 26 there was a distinct absence of this symptom.

With regard to the visual power, the data furnished were highly unsatisfactory, the terms used having been indefinite and unscientific. Making the best possible classification however, the writer found that in twenty-two cases the V. was good, (20-50 or better); in 16 it was fair 20-70 to

20-200; and in 47 it was bad (20-200 or less.) The refractive condition was noted in 66 cases; in 3 there was E., in 19 H, and in 43 M.

There was glaucoma in 12 cases. Malformations in other parts of the body occurred in 8 cases.

The writer then discusses the different theories which have been advanced to explain this anomaly. "These theories," he says, "can be divided into two classes; first, those which refer to the failure on the part of the iris to develop to some condition of environment, which may include the theory of the involvement of the iris in the destruction of the pupillary membrane, those which refer it to the absence of the iridal vessels, and those which attribute it to mechanical obstruction, inflammation, or intraocular pressure; and, second, those which refer it to a fault of the potential energy which determines the development and growth of embryonic tissues." The writer claims that all these theories have been based upon the study of only a few cases; therefore he has tried to amass a sufficient number of cases to form a satisfactory basis for a reasonable consideration of the probable etiology of this defect. He discusses this matter at length and as a result is disposed "to ascribe as the cause of congenital iridoremia, a lack, usually hereditary, of sufficient formative material for the development of the eye."

# ABSTRACTS FROM CURRENT GERMAN AND ENGLISH NEUROLOGIC LITERATURE.

BY WENDELL REBER, M.D.

PHILADELPHIA, PA.

## **Anatomic and Physiologic Observations on the Organ of Vision for the Purpose of Ascertaining the Alteration Caused by Section of the Optic Nerve.**

AUGUSTUS, WALLER, M. D., F. R. S. (Received Dec., 10, 1855 and read before the Royal Society, January, 17, 1856, being an extract from an unpublished paper in the Archives of the Royal Society. *Brain—Summer Number*, 1898.) [In view of the fact that to Von Gudden is credited priority in applying the degeneration method to the geographical study of the optic tracts, and furthermore, because of the latest views as to the macular origin of many retrobulbar degenerations, great historic interest attaches to the following paper found by Dr. A. de Watteville (the editor of "Brain") in a search for some other things through his father's papers. In introducing the paper to his readers, Dr. de Watteville says: "The paper bears evident signs of incompleteness. It is entitled Part I. and concludes with the sentence: 'In the following part of this paper, I intend to describe my experiments in tracing the fibres of the optic tracts into the deeper parts of the brain, and the results obtained from section of both optic nerves.' This intention was not fulfilled but the extracts as they stand in the words of their author possess historic interest and very clearly prove that Waller was equally alive not only to the principle (established by subsequent investigation) that the retinal ganglion cells preside over the nutrition of the optic nerve fibres, but also to the application of that principle in tracing out the optic paths. An abstract of the contribution is contained in the Proceedings of the Royal Society for 1856. A point of some interest is the view taken by Waller of the chiasm in the rabbit. He thought the decussation was complete although expressing himself with some reserve. Von

Gudden, who is pretty generally quoted in Germany and England as the originator of the degeneration method as applied to the retina and optic nerve, went through a similar difficulty in connection with the rabbit's chiasm, in 1874, concluding that at first that the decussation was complete, but subsequently detecting the relatively small uncrossed tract of degeneration that proves the decussation to be incomplete in the rabbit as it is in the dog, monkey and man. Signed, A. d W. W. R.]

After directing attention to the part played by the spinal ganglia in controlling the nutrition of their derivative nerves, Waller says: "The effects of division of the optic nerve may be studied on the retina by means of the ophthalmoscope during life, and post mortem by microscopic examination of the retina, the peripheric portion of the optic nerve connected with it, and the cerebral portion of the nerve from the divided end to the quadrigeminate bodies. In the eye of the rabbit, the optic nerve subdivides into two portions of nearly equal size, which spread out into two wing-like expansions over the internal surface of the choroid forming a most striking feature by their brilliant white color and reflecting the light much more strongly than the retina which surrounds them. This brilliant portion of the retina can only be easily perceived when the pupil is fully dilated. Repeated inspection of this structure at various intervals after section of the nerve, (ranging from two days up to as many months), have not enabled me to detect any alteration in the aspect of this part of the retina. Under the microscope, this expansion of the optic nerve consists of tubular fibers, beautifully clear and defined, and similar to those composing the optic tract save that they are smaller. The diverging filaments, visible to the naked eye, consist of fasciculi of these fibers, which before being blended with the grey fibers of the retina are not infrequently seen to split up into exceedingly fine filaments, due generally to a varicose dilatation of the tube. I have examined these fibers at different periods after section of the optic nerve; first, but a few days after the operation; in the other cases, anywhere from one to four months after the operation—and in every case I have found them as clear and as perfect as in the opposite sound eye. The elementary parts of the retina likewise appeared

unchanged, as also the parts composing Jacobi's membrane. My observations on the peripheric end of the optic nerve, (or that part in connection with the eye), have been less numerous than those on the retina, as this part of the nerve was generally removed in order to prevent the reunion of the divided ends. I have however, observed this portion about a month after section when its fibres were perfectly sound as well as those in the retina; while the cerebral portion in front of and behind the chiasm consisted of fibres nearly all disorganized and reduced to a granular condition throughout the whole extent of the root internal to the section.

Three months after section of the right nerve of a rabbit, the fibers anterior to the chiasm appeared quite disorganized. The various fasciculi of fine fibers easily seen on the sound side had nearly disappeared on the cut side; in their place was found a tissue composed of granules and fat like globules dispersed throughout the membranous parts of the nerve which presented very slight traces of its former fascicular structure. At the posterior surface of the chiasm, superficial sections made nearly parallel with its surface presented, on the cut, (right) side, the ordinary appearance of disorganized fibers, which assumed an oblique direction toward the left optic root, crossing nearly at right angles the sound fibers proceeding from the sound nerve on the opposite side.

In the chiasm the distinction between the sound and the diseased fibers was plainly manifest, and the manner in which each set of tubes crossed from one to the other side was beautifully displayed. From the right cut side the disorganized fibers seemed to run generally in bundles, which were intersected by other bundles of sound fibers, sometimes on the same plane, sometimes on a deeper plane. When the disorganization was far advanced, as in the case above described, single fibers or very fine fasciculi composed of a few fibers could not be well seen because of the resorption of much of the granular matter; but the sound fibers from the other side, mixed with granular matter, were found running together and mixing with the degenerated ones in every variable combination.

The plexiform arrangement of the optic nerves may, therefore, be regarded as complete in the chiasm, whether



as regards the fasciculi of the nerves or their elementary parts. In the optic tracts, (or roots), the alterations resulting from degeneration of the nerve are still more evident than in the chiasm and the nerve in front of it, probably on account of the greater size of the nerve fibers which compose them. It is then found to contain compound cells of black grains, nearly colorless spherical cells, fine granular matter and normal fibers. The compound bodies were usually globular, but sometimes considerably elongated, the former measuring about 0.015 mm. the latter frequently reaching 0.024 mm. The black grains were of various sizes varying from 0.002 mm. to 0.02 mm. The larger grains were almost transparent and nearly spherical. The transparent globules of about the same dimensions as the larger grains found in the compound cells were rather yellow, destitute of any nucleus and resembled fat globules in every respect. Granular matter, such as existed in the chiasm, was found in abundance at every point of the disorganised nerve, either arranged in lines or irregularly scattered. As a rule, I found it advisable to submit thin sections to the action of caustic soda to correct the opacity resulting from the above mentioned alterations. Among these diseased elements were to be seen several transparent varicose nerve tubes which were, to all appearances. normal. The plum pudding-like appearance assumed by the various elements contained in the nerve is different from that of any disorganized nerves I have hitherto examined. The compound granular bodies which give rise to this peculiar appearance can, at present, be only referred to the varicose swellings so frequent in this part of the nerve. \* \* \*

In the optic tract of the same side as the section, I have not been able to discover any altered fibers. As some physiologists have been of the opinion that different kinds of fibers entered into the composition of the optic nerves, (some running from one retina to the other, others from the quadrigeminate bodies of one side to those of the other,—and finally, some fibers direct from the quadrigeminate bodies of one side to the corresponding eye,) it may not be uninteresting to weigh the evidence on these points to be obtained by disorganizing the nerves. With regard to the fibers believed to unite the two retinæ, if they are supposed to have two nutritive centres in the nerve cells of each eye,



(an hypothesis which my researches on this subject do not allow me to entertain), we should find in the divided nerve, on its upper inner aspect, some sound fibers still nourished by the sound eye. Such fibers I have not thus far been able to detect. If we admit that each eye is the nutritive center of half of these direct fibers, we ought to find a mixture of sound and altered fibers in the nerve which has been divided; and in that which has been left untouched an arrangement which I have not observed. With regard to the fibers connecting the quadrigeminate bodies, on examining the posterior rim of the optic tract on the side opposite the section, (left) it was seen to be formed of fibers all apparently sound, although the rest of the tract was disorganized. The corresponding rim of the right tract was also quite sound. The presence of fibers connecting the quadrigeminate bodies may therefore be regarded as probable.

Direct fibers between each eye and the corresponding quadrigeminate bodies, running along the external rim of the tract, would require the presence of disorganized fibers in the external rim on the same side as the section. Such I have not found to be the case. On the same side as the divided nerve the external rim of the tract was perfectly sound; on the opposite side, the external rim consisted of disorganized fibers among which some normal ones were found.

As to the origin of the normal fibers found in the tract among the diseased ones, it would be, at present, premature to come to any conclusion without additional experiments.

The fibers of the optic tract may be traced with great facility over the surface of the internal or anterior geniculate body, where they present the above described appearance of those in the optic tract. Their course in the external geniculate and quadrigeminate bodies will be described in the succeeding part of this paper.

The most important result of the foregoing observation is,—THAT A GREAT PART IF NOT ALL, OF THE FIBERS OF THE OPTIC NERVE HAVE THEIR NUTRITIVE CENTERS IN THE RETINA AND FROM THE ANALOGY EXISTING BETWEEN THE NERVE CELLS OF THE RETINA AND THOSE OF THE SPINAL GANGLIA, WE ARE LED TO ATTRIBUTE THIS NUTRITIVE FORCE TO THEM."

[No published record exists of the experiments last referred to, nor have I discovered any memoranda relating to them among my father's papers. Dr. A. de W.]

**On the Normal Pupillary Conditions in Infancy and Early Childhood.**

PFISTER HERMAN, M. D., (*Archiv f. Kinderheilkunde*, Part 1 and 2.) Impelled by the utter lack of statistics as to the status of the pupil in healthy babes, Pfister has devoted himself to a study of the pupillary phenomena in 293 children, of which 148 were males, and 145 females. Of this number, 249 (over 85 per cent.) were under 6 years of age, and all of them came under observation as clinical or hospital patients. Out of his study he formulates the following conclusions:

1. The average pupillary width increases steadily after the first month of life, at first rapidly, later on more gradually. By the third to the sixth year, the pupillary width is about double that at the end of the first month. The average adult pupil differs very little in size from that of a 3 to 6 year old child. Sex seems to make no special difference, nor do diseases of the respiratory or gastrointestinal tract particularly influence the size of the pupil.

2. The average amplitude of pupillary reaction increases also from the first month of life on, (although more gradually than the increase in pupillary area,) and by the sixth year is fully double that at the end of the first month. In this observation girls showed at all stages of infancy a greater amplitude of reaction than boys, but said reaction was in no wise influenced by the above mentioned diseases.

3. Hippus was observed in barely 1 per cent. of the 293 cases. Of the 3 children presenting this phenomenon, two showed absolutely no disease of the central nervous system.

4. (a.) Next to the light reflex, the corneal reflex was the earliest to develop, and the most nearly constant in presence.

(b.) Next to this in development and order of frequency was the nictitation reflex, which appeared between the sixth and eighth week, and seemed pretty constant after the fourth month.

(c.) Following this reflex comes in order of development the sensory skin reflex which appeared about the end of the

second month, became most frequent about the seventh month, (reaching 87 per cent.), and then fell off to a steady average of about 40 per cent.

5. Lastly is to be mentioned the reflex to stimulus of the acoustic or auditory nerve, which was first noticed in the tenth week of life, and remained in about 50 per cent of all cases.

#### **Chlorosis and Retino-Papillitis.**

BANNISTER, H. M., M. D. (*Jour. Nerv. and Ment. Dis.*, Dec. 1898.) Under this title, Bannister details rather fully the histories of two young women in whom there was an association of optic neuritis with an unmistakable chlorosis. The cases were, in most respects, typical of most instances of papillitis secondary to some blood dyscrasia. In the first case, the swelling of the nerveheads was sufficient to raise the question of brain tumor, which was soon settled, however by the rapid disappearance of the symptoms under iron and arsenic. The features of the second case were not so pronounced as regards the optic nerves, only one of which was involved; strangely enough that was while the patient was under antianemics, but recovery was complete, as it also was in case one in which the vision was seriously comprised for a while.

[Both case histories are of much interest and remind one forcibly of the class of cases described by Oliver, and also by Posey at the 1897 meeting of the American Medical Association. They are even more closely allied to the series of cases so splendidly portrayed by Oliver in the January (1898) number of these ANNALS. It is hard to put down the thought that this variety of papillitis bears some intimate relation to the autotoxemia which is nearly always the accompaniment of such blood vices as anemia, chlorosis, chloranemia, and their kindred. W. R.]

#### **On Immobility of the Pupils in Hysteria, With Notes on the Symptomatology and Differential Diagnosis of Epileptic and Hysterical Attacks.**

KARPLUS, J. H., M. D., (*Jahrbuecher, f. Psychiatrie und Neurologie No 17, 1898*—Abstract in *Jour. Nerv. and Ment. Dis.*, December, 1898.) Karplus presents an extended series of observations with critical clin-

ical histories of some eighteen cases of hysteria, in which particular attention is paid to the condition of the pupils. In general he is opposed to the view that immobility of the pupils is of diagnostic value in the differentiation of hysteria and epilepsy, stating that in the attacks of hysteria major, the pupils may be found to present exactly the same phenomena that are observed in epileptic convulsions. In the consideration of non-convulsive hysteria he shows that in these cases, (3 of which he has studied) the patients "lay with closed eyes as if dead," and in all of them there was no pupillary response to light.

Similar conditions were noted in the cases of hysteria with convulsive respiratory movements, in which there was no loss of consciousness, also in those who were the subject of "partial" seizures, and even in still milder forms of the disorder.

Karplus is inclined to view this variety of immobility of the pupils as a cortical phenomenon, believing that pupillary dilatation and contraction both have their representative spheres in the cerebral cortex; if, for any reason, the cortical impulses be interrupted, a condition of cramp arises in the iris musculature, which is the basis of the phenomenon in question. Thus, (hysteric) spastic state of the iris, (iridismus? W. R.) is likened by the author to hysteric contractures of the lower limbs, secondary to which an analogous loss of the patellar reflex may be noted.

#### **Analysis of the Ocular Phenomena In Forty Cases of General Paralysis of the Insane.**

DAWSON, W. R., M. D. Dublin, M. R. C. P. I., and RAMBAUT, D. H., M. D., Dublin. (*British Medical Journal*, Sept., 10, 1898.) The observations forming the basis of this paper were made at the Richmond District Asylum, Dublin, on 40 cases of general paralysis, together with 16 cases of other forms of insanity somewhat resembling the severer malady, and include 11 cases of alcoholic dementia, one of congenitally weak mind, and 4 of paranoia. The cases of general paralysis refer to 35 men and 5 women, and were unselected except in so far as to insure a reasonable certainty of diagnosis. With two exceptions they were all in the pronounced stages of the disease, the two alluded to being rather early cases; but they presented a considerable

riety both in mental and physical symptoms, and are rly representative of the different types of the disease, me closely approximating to the old fashioned clinical sture, others diverging more or less widely from it. As etiology, antecedent syphilis was certain in 11 cases, and obable in 6 more, (17 or 42½ per cent, in all) but in no se positively excluded. Alcoholism was certain in 17, obable in 5, (22 in all, or 35 per cent.) In 12 cases these o causative factors were co-operative.

The symptoms referable to the visual sphere are as follows:—1., ocular palsies; 2, pupillary anomalies; 3, ophthalmoscopic changes.

#### OCULAR PALSIES.

These presented in five cases, four of which were third rve, and the remaining one a sixth-nerve palsy. In all these there was evidence of spinal implication, and three the five were undoubtedly specific.

#### PUPILLARY ANOMALIES.

(a) *Anisocoria.* One of the most frequent of these was equality (anisocoria), which was found in 93 per cent. all cases. As the condition appears to be rather common in other forms of insanity not allied to general paralysis, and as it even found in health, the authors incline to ree with Siemerling, that the symptom does not deserve e importance formally assigned to it, and that its value is latively negative.

(b) *Size of pupil.* Of the 23 cases in which the size of e pupil was noted, 8 showed bilateral mydriasis, 6 bilateral myosis, 3 unilateral mydriasis, and 1 mydriasis on one le and myosis on the other—total 18 cases (78.2 per cent.) abnormality in size. None of the cases showed pin-hole pupils, while 2 mydriatic and 3 myotic cases presented re-ex iridoplegia. The knee reflexes were altered in 6 of e mydriatic, and 7 of the myotic cases, as also in the one se that showed mydriasis on one side and myosis on the her.

(c) *Irregularity of outline* in one or both pupils was ted in one or both pupils in 37 out of 39 cases, but as is condition was present in all but one of the control cases, e authors do not ascribe to it any practical importance.

(d) *Pupillary Reflexes*.—Of these reflexes the sympathetic was found, most frequently impaired. The tests consisted in pinching or pricking the neck, or stroking the face, to which test 38 out of 40 cases failed to react. Next in frequency came absence or impairment of the consensual light reflex—noted in 27 out of 40 cases.

The direct light reflex was absent or reduced in one or both eyes in 17 out of 40 cases.

*Argyll-Robertson Phenomenon*.—This was observed in its complete form in both eyes 5 times, and in one eye 3 times, and a point of no little interest is that in these 3 cases of unilateral reflex iridoplegia, the second eye showed a total iridoplegia. Three more cases in which the reaction was present in imperfect form make a total of 12 out of 39 (30.76 per cent).

Total iridoplegia was present in both eyes in 2 cases only, and in one eye in the 3 cases just above mentioned, in which iridoplegia existed in the fellow eye. In both cases of reflex iridoplegia there was marked dementia, the gait was affected and the knee reflexes increased.

From the foregoing and other facts concerning the pupillary reflexes the authors conclude:

a. That the sensory or sympathetic is the most commonly affected pupillary reflex.

b. That disturbances of the light reflexes is next in order of involvement, the consensual being oftener affected than the direct reflex.

c. That the associated reflex (Argyll-Robertson phenomena,) is very seldom completely abolished, and relatively seldom impaired.

*Ophthalmoscopic Appearances*.—Of 30 cases examined ophthalmoscopically, 3 showed advanced atrophy, 1 pronounced optic neuritis, 3 incipient neuritis, and 1 an old low-grade neuritis with perivascularitis, making a total of 8 out of 30 (26.5 per cent.), or rather more than the frequency generally assumed (7 per cent). In addition to the above, 6 or 7 cases showed doubtful appearances which may possibly have been morbid.

**On Brain-Anatomy and Brain-Tumors in General, and Brain-Tumors and Optic-Neuritis in Particular.**

KRAUSS, W. C., M. D. (*Phil. Med. Jour.*, October 1, 1898.)

[As an introductory to his paper, Dr. Krauss formulates some rules "two-three-and-five" as helps toward remembering the gross anatomy of the brain. They are striking in their simplicity, and are well worth the careful study of all who are in any way interested in the inter-relation of eye and brain—and surely every ophthalmologist ought to be.—W. R.]

Having noted the continuous presence of this symptom 12 times out of 13 of my own cases of brain tumor (and once *probably* present), I determined to ascertain if possible the class of cases in which choked disc was absent, or whether the nature of the growth, its location, size, and period of growth had any decided influence over the determination of a neuritis. If choked disc depended upon an increased intracranial pressure, its absence would be looked for in tumors of small size and slow growth. If to microbic influences, then its absence would be noted in non-pathogenic neoplasms.

Another problem, the solution of which was attempted, was (a) whether the location of the tumor had any bearing upon the appearance of optic neuritis; (b) whether, as has been claimed, pons or basal tumors predispose less to optic neuritis than cortical tumors; and (c) whether cerebellar tumors are more often accompanied by choked disc than cerebral tumors.

Some of the other queries whose solutions were desired, were (a) whether unilateral choked disc determined the hemisphere in which the tumor was located; (b) whether the greater intensity of the neuritis in one eye indicated the side containing the tumor; (c) and whether the early or late appearance of optic neuritis indicated anything in the nature, character, location or period of growth of the tumor.

To study these different problems I selected from recent literature 100 cases of brain tumor (cerebral), in which an ophthalmoscopic examination had been made and the presence or absence of choked disc, or optic neuritis, had been definitely determined. The symptoms, location of growth, and its nature were carefully tabulated and the results obtained, with their accompanying comment, led to the following conclusions:



1. Optic neuritis is present in about 90 per cent. of all cases of brain tumor.

2. It is more often present in cerebral than in cerebellar cases.

3. The location of the tumor exerts little influence over the appearance of the papillitis.

4. The size and nature of the tumor exert but little influence over the production of the papillitis.

5. Tumors of slow growth are less inclined to be accompanied with optic neuritis than those of rapid growth.

6. It is probable that unilateral choked disc is indicative of disease in the hemisphere corresponding to the eye involved.

7. It is doubtful whether increased intracranial pressure is solely and alone responsible for the production of an optic neuritis in cases of brain tumor.

[In this paper Dr. Krauss uses the terms optic neuritis (or papillitis,) and choked disc interchangeably, a point that will not be conceded by all ophthalmologists and neurologists. While well advanced choked disc may so closely simulate optic neuritis as to often make distinction very difficult, moderate choked disc has some features that frequently make it peculiarly individual and characteristic; and there are those who believe that that choked disc is the accompaniment of *slow-growing neoplasms*, while papillitis heralds an *inflammatory process* within the cranium.—W. R.]



## NOTES AND ANNOUNCEMENTS.

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Under this heading the ANNALS will publish items of interest to readers. Please address Albert B. Hale, M. D., 103 State street (Chicago.)

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Dr. H. V. Würdemann, of Milwaukee who has been associate editor of the ANNALS OF OPHTHALMOLOGY in charge of the department of German literature, has accepted the position of editor-in-chief vice Dr. Casey A. Wood of Chicago resigned. Dr. Wood will retain an interest in the ANNALS OF OPHTHALMOLOGY and will remain in charge of the Italian literature.

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The staff of the ANNALS OF OPHTHALMOLOGY will shortly be enlarged by the appointment of additional editors and a number of collaborators. Abstracts of Dutch, Russian, Scandinavian, English and Grecian literature will be hereafter included. With these, the abstract departments of the journal will cover the ophthalmic literature of all the world. Book reviews and abstracts of foreign literature have generally appeared in the ANNALS several months in advance of other publications, even of journals of foreign countries where the originals were published. These abstract departments are a very valuable feature of the ANNALS, as references to all the up-to-date literature are here stated. Hereafter only original papers of first importance or the most exhaustive type will be accepted for publication in the ANNALS OF OPHTHALMOLOGY.

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BERLIN. Dr. Karl Hartman has been appointed Professor of ophthalmology.

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Dr. Herrmann Knapp has been elected Vice-President of the New York Academy of Medicine.

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Miss Helen Gould has given \$5000 to endow a free bed in the Manhattan Eye and Ear Hospital.

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Dr. David De Beck of Cincinnati has been made a member of the Société Française d'Ophthalmologie.

Dr. F. Van Fleet and Dr. J. Edward Giles have been elected surgeons to the Manhattan Eye and Ear Hospital, New York.

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Dr. E. S. Peck has been appointed Professor of Diseases of the Eye at the New York Post-Graduate Medical School and Hospital.

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NEW ORLEANS. Resident surgeons for the Eye, Ear, Nose and Throat Hospital were examined for appointment the first Monday in December.

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Ballabon has devised a cyclochrome which can be used to bring about a rapid change of colors, and is handier and more exact than the ordinary perimeter.

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Dr. P. R. Joly, in his Medical Thesis at Bordeaux, demonstrates the spread of trachoma by flies; in the same way, flies' legs have been shown to carry tubercle, plague bacillus and the pus microbes.

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Dr. A. M. Ramsey of Glasgow has published an "Atlas of External Diseases of the Eye," which is of great credit to ophthalmology and to the University of Glasgow, where all the work was done.

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At a recent meeting of the Chicago Ophthalmological Society, Dr. Snyder (Chicago) related his remarkably exhaustive study in trachoma, by which he hopes to have isolated the microorganism of that disease.

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Dr. Geo. F. Fiske has resigned the professorship of Ophthalmology and Otology at the Northwestern University Women's Medical College (Chicago), and Dr. Frank Allport has been appointed to fill the vacancy.

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MINNEAPOLIS. At a meeting of the Minnesota State Medical Society held last June, a section of Ophthalmology, Otology, Rhinology and Laryngology were created and Dr. H. McL. Morton of Minneapolis elected chairman of the new Section.

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SWITZERLAND. Dr. N. T. Weill, son of Mr. Julius Weill of Titusville, Pa., has been appointed assistant physician at the Eye and Ear Clinic of the University of Zürich. It is stated in a Zürich paper that this is the first time such an honor has been conferred on an American.

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The *Scientific American* for December 17, 1898, has a good article on the effect of modern paper upon eyesight, and in tracing the

history of printing and paper making, concludes that the old, rough hand made papers, were much better, both in its effect upon the eyes by the impression of its type, and in its durability, than is the newer fiber and machine made glazed paper.

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Bright red spectacles accompanied by internal doses of calomel, is a new German specific against seasickness. It is deduced from Epstein's investigations on the influence of color on the blood vessels in the brain. Seasickness is due to lack of blood in the brain; the color red sends blood to the brain with a rush. After looking at one point for some time through red glasses, a patient is cured rapidly.

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In New York state a suit has been won against an optician by the award of \$54.44, damages, all that was asked. In the complaint it was stated that the optician had prescribed, after an examination, a pair of glasses for which \$6.75 had been charged. A few days later the plaintiff's eyes hurt and he was sick at the stomach. He was told, nevertheless, to keep on using his glasses. He asked for his money back but was refused. At last he sued, with the above result.

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Some Cause for Bad Spelling.—At a recent meeting of the Biological Club of the University of Pennsylvania, Dr. Lightner Witner discussed the causes of bad spelling exhibited by some school-children. He related that in addition to backward children who were unable to learn anything, there were others who learned to spell with difficulty on account of ocular defect, for instance, diplopia; and still others who failed because of verbal deafness—that is, an inability to hear words with or without want of hearing for other sounds.

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The *Lancet* says that the German and French manufacturers turn out every year a great number of artificial eyes, amounting last year to nearly two and a half million. These figures do not indicate in any way what is the proportion between eyes for human beings, dolls and stuffed animals. It is noticeable that most totally blind persons neglect the advantages of artificial eyes, because they cannot see themselves and soon forget how they may appear to others; whereas those who have been unfortunate enough to lose one eye are very eager to take advantage of the cosmetic effect of a glass eye, because they see themselves in a mirror and know what is the effect upon others.

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Dr. Javal, director of the Ophthalmological Laboratory of the Sorbonne, Paris, was recently sued for libel by a firm of opticians manufacturing spectacle lens called "isometropic" from a baryta glass, and for which special advantages were claimed. Dr. Javal

made a careful investigation of the lens and reported to the Academy of Medicine that the difference between the baryta glass and ordinary glass was quite insignificant, and that the lenses were no better than those made from ordinary glass. The court decided in Javal's favor, holding that a scientific man is at liberty to criticise any manufactured article for which special advantages are claimed, and that his observations may be published in the public's interests.

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The *Scientific American* quotes a noted London oculist as saying that he knows of several cases of colorblind artists who earn quite a living with the brush. There are numbers who draw well with pencil, ink and crayon, but he knows of a scene painter who, though color-blind, paints all the scenery for a theatre, including interiors and landscapes. Another, a lady, is the daughter of a famous artist; she was taught by the father, and though quite unable to distinguish red from green, she has her colors labeled and uses them with much skill. Another, a lady of some celebrity, has for years exhibited to much effect in London. Still another, a naval officer who left the navy on account of color-blindness, has learned to use colors very deftly, and makes a handsome yearly income from his paintings.

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The Blind and Sensitive Elements.—From Russia comes the news (*Am. X-Ray Journal*) that Noishewski has invented an instrument, the principle of which depends on the sensitiveness of the light of selenium and tellurium, both of which change their quality as conductors of electricity with a variation in the light to which they are exposed. In stating that the blind can see by this instrument, a relatively meaning only is indicated. While their actual vision will be unaffected, they will feel the various effects of changing light by its action. It is claimed that a totally blind man has been enabled to find the windows in a room and after some practice to distinguish approaching objects. The inventor hopes to make the instrument so efficient that the blind will be able to tell almost certainly when approaching an opaque or transparent substance.

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School Physicians in Berlin.—According to the *Deutsche medicinische Wochenschrift* a great advance has been recently made in the medical inspection of schools in Berlin. A school physician is engaged by contract by a magistrate, for each common school. His duties are to examine the children upon entrance in the schools to determine their physical capacity, the examination including tests of the special senses and both the mental and physical condition of the children. At intervals of fourteen days the physician examines the children in the different schools; in

the meantime the physician may be called in at the request of the teacher if thought necessary. The oversight of the general hygienic condition of the schoolhouse is also included among his duties. The salary for these services has been placed at 500 marks per year.

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New York Academy of Medicine—Section on Pediatrics.—At the meeting held November 10th, Dr. Edwin S. Peck reported a case of traumatic cataract in an infant's eye from pressure of forceps. He said that on October 14, 1890, he had been hastily summoned to see an infant that had just been delivered by a high forceps operation. The right blade of the forceps had rested just below the inferior lid of the right eye. The inferior culdesac of the conjunctiva was filled with blood, the cornea was steamy and the pupil enlarged. In the space of twenty minutes the pupillary field changed from a dull gray reflex to an opacity due to the development of a soft cataract which entirely filled the lens. The treatment of the first forty-eight hours consisted in installations of weak solutions of mercuric chloroid and of atropin, and the local application of ice. By the next day a fully formed milky cataract filled the pupillary area. On the ninth day the eye first opened without aid, but the corneal opacity was still present. On November 16th, both eyes were equally open and the cornea had regained its clearness and reflex. When six months old, the pupil responded to light, the ophthalmoscope showed the retinal vessels and a spot of diffused cataract. When examined in May of the present year, the vision in this eye was  $\frac{20}{70}$ , and it seemed probable that perfect vision would ultimately be secured.

## BOOK NOTICES.

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### THE VISUAL AND PUPILLARY TRACTS.

BAAS, C. (*Die Seh-und Pupillenbahnen, Augenärztlichen Unterrichtstafeln*, Heft 14, J. Kern, Breslau, 1898.)

This number of Magnus' well known lecture charts contains two large colored charts showing a scheme of the visual and pupillary tracts with short descriptive text and is very useful not only for lecture purposes but for refreshing the memory of the busy ophthalmologist.

H. V. W.

### HANDBOOK OF OPHTHALMOLOGY.

GRAEFE-SAEMISCH. (*Handbuch der gesamten Augenheilkunde*, Wm. Engelmann, Leipzig, 1898.) The second edition of this classic work is now appearing in parts, of which there will be 12. Price of each, 2 m.

The first part is by Alfred v. Graefe, containing description of the ocular muscles and the disturbances of motility. The author, in the first chapter upon the ocular movements, bases his work upon that of Donders, Ruete and Volkmann, then proceeds to the consideration of ocular muscle paralysis and muscular squint. It is not necessary to state that v. Graefe has dealt with this chapter with the thoroughness with which he was known and has given all other authors credit for their work. The voluminous references to the literature and a large number of clinical histories increase the value of this brochure.

H. V. W.

### MANUAL OF OPHTHALMIC SURGERY AND MEDICINE.

JESSUP, WALTER H. H., M. A., M. D. (Contab), Ophthalmic surgeon at St. Bartholomew's Hospital, etc. (*London J. und A. Churchill*, 1898.) 469 pages, octavo. \$3.00. Philadelphia, P. Blakiston's Son & Co.

If the writing a good book implies only the exhibition of good paper, clear type, proper illustrations and a proper regard for modern ideas, the book before me is entitled to be called good; and yet it was only after a dogged persistence that I finished it. Perhaps I have no right to criticise a small text book of such an elementary nature, if I carried the thought that I might find something new while reading it. I dislike "syphilitic iritis," "quiet iritis" and such terms, pathology, not systematic signs or symptoms, ought to be the basis of a classification. I dislike the advice to use a general anesthetic for iridectomy, when surgeons all over the world are satisfied with cocain. I dislike the confusion of metric and common system of weights and measures. I like very much the chapter on "Affections of the Ocular Muscles," and know of no small, general

hand book that gives the subject so well. The chapter (XXIII) on "Eye Symptoms and Diseases in General Diseases" gives the student a good idea of what to look for. The appendix with formula (also, in the grains and ounces system) and with rules for operating is practical. The index is fair.

I feel justified in saying that for the English undergraduate student the book will be an excellent quiz-compend; for the practitioner or for the American student, there are other and better compends or text books.

A. B. H.

#### THE SHORT-SIGHTED EYE.

HERRNHEISER, J., Privatdocent to the German University of Prague. (*Das Kurzsichtige Auge, Augenärztliche Unterrichtstafeln of Prof. Magnus, Heft 15, Breslau 1898, J. U. Kern.*)

Although the subject of myopia has been greatly written about, much of this has been characterized rather by verbosity of language and rehash of description which has been largely devised from incorrect anatomy. In 1898 Schnabel and Herrnheiser published their work upon Staphyloma posticum, Conus and Myopia which was a report of anatomic findings from a large number of eyes, the refraction of which had been accurately ascertained during the life of the subject. They showed then that the myopic process was complicated and in the more common form myopia is only a symptom arising through different congenital or acquired anomalies which result in changing the focus of the eye so that the retina does not lie at the posterior focus.

There are two forms of myopia, one refractive; a myopia due to increase in the refraction of the dioptric apparatus commonly caused by increase of corneal and lenticular curvature; axis myopia is due to abnormal lengthening of the eyeball caused usually by bulging of the posterior wall. Herrnheiser describes in clear and succinct language, suitable for the lecture chamber, the subject of myopia, exclusive of its correction or treatment, in a manner that could be copied with advantage by most of our lecturers. This takes 16 pages of description and is accompanied by 8 plates, well executed, consisting of diagrams and colored drawings of the fundus and enlarged microscopic drawings. This number of the ophthalmic lecture charts is of especial value to both the lecturer and student.

#### ATLAS OF EXTERNAL EYE DISEASES.

HAAB, O., Professor and Director to the Eye Clinic of Zürich University. (*Lehmann's med. Handatlanten, Bd. XVIII, München, 1899. Price, 10 m.*)

The name of the author guarantees the quality of this work. This book is supposed to present to the student and the practicing physician what they are frequently unable to acquire by actual contact with patients. The illustrations are accompanied by a considerable amount of text (228 pages) which prepares the reader for the clinical study of external eye diseases. In short and pithy language

he describes the qualifications of a specialist and then goes on to explain the various methods of examining external diseases of the eye, from simple inspection by daylight to ophthalmoscopy, from taking the visual acuity to examination of the light and color senses as well as disturbances of ocular motility. The illustrations are simply exquisite and true to nature. They have been made by a true artist, J. Fink, who spent much time and effort, in not only their artistic execution, but in acquiring the special knowledge essential to depiction of such clinical work. Forty plates containing from two to three illustrations each, show the most common external eye diseases; those of the lacrimal apparatus, the eyelids, conjunctiva, cornea and sclera, as well as diseases of the iris, the lens and the vitreous body. They are perfectly pictured and cannot only be readily recognized, but if once seen, the illustrations will indelibly impress the external appearances of these diseases upon the mind of the reader. In closing the diseases of the orbit are pictured and described.

The text includes a fairly complete pathology and therapy of the ocular diseases. This book will certainly become as popular as Haab's other atlas upon ophthalmoscopy, which has already appeared with an English text and thus we may soon expect to have this second one published in our language. Both atlases have my hearty recommendation.

#### **METHODS FOR THE MICROSCOPIC EXAMINATION OF THE EYE**

**SELIGMANN, S.**, of Hamburg. (*Die Mikroskopischen Untersuchungsmethoden des Auges*, Berlin, S. Krager, 1899.)

**GREEF, R.**, of Berlin. (*Die Mikroskopischen Untersuchungsmethoden, des Auges*, Berlin, A. Hirschwald, 1899.)

Both of these works have appeared about the same time and filled a well known want and void in ophthalmic literature; for this field has hitherto been untouched except here and there in the larger works on ophthalmology, and the publications have, as a rule, been upon some special subject and are scattered throughout the vast mass of ophthalmic literature.

Greef's work is more elementary than Seligmann's and gives the beginner good advice free from unnecessary verbiage. He recommends those recognized methods which have been taught by him for many years in the University. The special portion of the work which deals with methods of preparation of the individual portions of the organ, is concise and short and will give the beginner a very good idea of the methods to be used in the microscopic examination of the eye. Seligmann's work is much more pretentious and is decidedly complete. The most accomplished laboratory expert will find this work of great value, and yet it is so well put together and the language so free from unnecessary ballast, that any scientific ophthalmologist may welcome it to his library. All known methods of preparing the eye for microscopic examination are here concisely and thoroughly described and is in contrast to that of Greef's, who limits his description to the methods most in favor by himself.



Seligmann's book comprises 240 pages, has full references to all the literature and is complete. A thorough examination of his book has failed to elicit any errors of omission or commission except that no space is given to bacteriologic study of eye diseases which the author has perhaps left for another edition. While I can recommend Greef's work for the beginner, that of Seligmann is certainly not only advisable for the teacher and laboratory expert, but is really a necessity if he wishes to keep up with the times. No technical work which has come to the editor's table for a long time has given him more pleasure and has been more practically useful than this work of Seligmann's.

H. V. W.

#### **DISTURBANCES OF VISION AND UTERINE AFFECTIONS.**

MOOREN, A. (*Gurchtss iörungen und Uterinleiden*, Weisbaden von J. F., Bergmann, publisher, 1898.)

The first edition of this was published in 1881, in an entire number of Knapp's Archives. It has been decidedly enlarged and brought up to date by the author. He considers the relation of the female sex and of the female organs.

The influence of Uterine Disturbance upon Eye Diseases.

The influence of the Stoppage of Menstruation.

The Effects of Para-Metritis.

“ “ Anomalies of the Uterus.

“ “ Hysteria.

“ “ Basedow's Disease, of Lactation and Child-bed, and of the Climateric are fully considered.

From the standpoint of the reviewer, it seems that the author has taken rather extreme grounds in this book and although it is not to be doubted that menstruation and the climateric and diseases of the uterus have some influence upon the eyes through malnutrition, from their effects on the general system, or through reflex action upon the nervous system or directly by the blood-vessels, it is a long stretch of the imagination to conceive the direct relation between vaginismus or copulation and iritis without the coëxistence of specific or other disease which might more readily be considered the origin of the ocular affection. The author's handling of the subject of hysteria is decidedly incomplete. He does not consider that many cases he has seen of ocular defects in women should come under this heading but thinks that the symptoms as a rule proceed from reflex irritation to the ovaries. It is somewhat remarkable at this day to note that all subjective symptoms of muscular asthenopia disappear by using prismatic glasses for near work; if these fail, tenotomy of the antagonistics is recommended. Not a word is said about developing the powers of convergence by muscular exercise, such as the method of Gould, which has met with such success in this class of cases. 12 pages are given to the local and general treatment of eye diseases which may be supposed to arise from disturbances of the female generative organs, in which some valuable advice may be found.

H. V. W.

**VALUE OF CONJUNCTIVA IN PRACTICAL OPERATIVE OPH-  
THALMIA.**

KUHNT, H. (*Ueber die Verwerthbarkeit der Binderhaut in der praktischen u. operativen Augenheilkunde*. 22 Figuren in Text, 149 pages.

Wiesbaden, J. F. Bergmann, 1898.), reports results of several hundred cases of transplantation of conjunctiva: 1. For keratoplasty or scleroplasty. 2. As a permanent protection for exposed portions of the eyeball (after removing prolapses of the iris or staphyloma). 3. As a temporary protection after injuries and operations.

For keratoplasty, in 109 cases of deep and extensive simple ulcer of the cornea:

- 67 perforating ulcers,
- 43 marginal ulcers,
- 7 ulcers in severe scrofulous keratitis,
- 12 ulcers caused by staphylococci and streptococci,
- 5 corneal abscesses proper,
- 237 ulcers serpens.

He analyzes the various forms of corneal ulcers, especially those which although not infected, healed slowly, giving rise to irritation of anterior portion of the uvea, and showing a tendency to perforate. The occurrence of ulcers is usually due to a local disturbance of nutrition, probably in the circulation of the marginal loops of the blood-vessels. The different methods of treatment are mentioned.

Kuhnt prefers a form of treatment, which brings about a cure without opening the anterior chamber. This is attained by keratoplasty. His reasons for using conjunctiva are: 1. The histogenetic similarity of conjunctiva and cornea, the epithelial layer of the cornea being a modified conjunctiva. 2. Clinically, in the regeneration of all classes of corneal substance, the conjunctiva is drawn upon by formation of a reparative pannus, i. e., a new formation of conjunctiva over the defect of the cornea.

His method is as follows: Thorough cleansing of the ulcer by scraping with an instrument, formed like Desmarre's scarificateurs (of which he uses three different shapes). If Descemet's membrane is exposed, the ulcer is brushed with a camel's hair brush dipped in a disinfecting solution.

A pedunculated conjunctival flap is formed from the conjunctiva next to the ulcer, without much subconjunctival tissue, allowing for subsequent shrinkage to one-half its size. To help the adaptation by the pressure of the upper lid, the base lies at the upper corneal margin, so that the flap covers the corneal defect in a vertical direction, for an ulcer in the upper temporal quadrant of the cornea, the conjunctiva is detached close to the limbus, from a point above and corresponding to the nasal border of the ulcer as far as the horizontal meridian on the temporal side, then 4 to 6 mm. toward the equator to the first. After the bleeding ceases, the flap is implanted by sinking its borders under the margin of the ulcer, a drop of atropin is instilled, the upper lid pulled over the globe and pressed against it, and the eye bandaged for two to four days. At the end

of four to five days the flap is adherent and generally becomes diaphanous.

In central or para-central ulcers, Kuhnt forms a flap with two pedicles, one above and another below the corneal limbus. When the healing is completed, the portions of the flap between the limbus and margin of the ulcer are cut away. In cases of shrunken conjunctiva, as in trachoma, a flap without pedicle has been successfully transplanted. Two flaps crossing each other proved beneficial in very large ulcers, with prolapse of iris, in which a single flap did not give resistance to the intra-ocular pressure, in combination with iridectomy excision of the cicatricial tissue of the cornea in old prolapses of the iris, corneal fistula, keratocele and incipient corneal staphyloma, preceded the transplantation.

Wounds of the cornea or sclera are covered by conjunctiva as a mechanical protection against infection by dacryocystitis or blennorrhea. The conjunctiva is detached from half the circumference of the limbus on each side to 1.5 cm. toward the equator and drawn over the cornea, where both ends are sutured in a direction vertical to that of the wound. If the tension is too great, it is relieved by incisions 1 cm. from limbus.

Kuhnt treated in this manner 314 injuries, materially lowering the indication for enucleation. Before cataract extractions, Kuhnt prepares a conjunctival flap with two pedicles and transplants it over the wound for prophylactic purposes against infection in unruly persons or those suffering from emphysema, bronchiectasia, ozena, chronic rhinitis, etc.

It is done as a therapeutic measure:

1. In a tardy closure of the wound.
2. In prolapse of the iris in simple extraction.
3. In infection of the lips of the wound.

In conclusion he gives a historical review and emphasizes the fact that his method consists in keratoplasty or scleroplasty whereas Shorlie's had only a temporary pressure and protection in view.

CHAS. ZIMMERMANN.

#### **OCULAR THERAPEUTICS FOR PHYSICIANS AND STUDENTS.**

OHLEMANN, M. D., F. W. MAX, Minden, Germany. Translated and edited by Charles A. Oliver, A. M., M. D., Philadelphia. P. Blakistons, Son & Co., 1899. Octavo, 277 pages. \$1.75.

In 1896, on its appearance in the original German, I had the pleasure of commenting on Ohlemann's *Augenärztliche Therapie*, and for the moment I thought of attempting the translation. That I did not do so, is happily shown by the appearance of Dr. Oliver's American edition now before me. It is no discourtesy to the original, written, as it was, for German eyes, to say that this present edition is much better adapted to American practitioners. The author before says that "since 1817 no attempt has been made to treat the remedial agents used in Ophthalmology exhaustingly." which was undoubtedly so when written, but this cannot apply to the American edition, because the title "Ophthalmological Thera-

peutics" of Landolt and Gygax has meanwhile appeared, but while the latter is very brief and attacks the subject alphabetically only. Oliver's Ohlemann is systematic, treating each subject in order, furnishing as well, at the end, a splendid index with cross references to facilitate to student's or practitioner's work. A glance at the table of contents will show what I mean, there are both a "General Part" and a "Special Part." The general part has five chapters, headed Mechanical Treatment (massage), Thermic Agents, Chemic Agents, Electricity, General Treatment. The special part has twelve chapters, beginning with Treatment of the Lids, and ending with Treatment of the Muscles and Nerves.

One great advantage of such a method lies in its unprejudiced attitude toward disease in general. No attempt is made to advocate any particular theory or routine; the drawback to many text books is that the author is apt to advocate too intensely some particular theory of treatment. Not so in Ohlemann. All well tried plans are given, few are commented on, and then only in words other than those of the author, and the reader is allowed to take his choice. many prescriptions for the same drug are given, many different preparations, so that one may be tried if at first fail, and various combinations are suggested to add broadness to the practitioner's preferences.

There are 225 prescriptions all told, and no ophthalmic drug, so far as I can see, acknowledged by the Pharmacopoeia, but is included in one or more of them. The appearance of these prescriptions is, to my mind, superior to that of the German. In the latter, the metric notion alone was used, but the percentages were obscure, because the decimal division of the drug was not given immediately above that of the vehicle.

It is greatly to Dr. Oliver's credit that he has corrected this obscurity, and written for us each prescription so that each numeral in all drugs or vehicles appeared exactly above its corresponding numeral. It is a pleasure to read such prescriptions. In addition, Dr. Oliver has translated every decimal prescription into its working equivalent of apothecaries' weights and measures; and I am pleased to say that he has avoided the slipshod expression of "a three grain solution."

The character of the paper and type is perfect, the print is large and clear cut, the numerals unmistakably plain, and the language precise. Dr. Oliver has advanced to the use of *chemic blennorrhoea* and *edema*, but clings to *chorioid* and *mechanical*, *sulphate* and *chloride*—but I cannot find fault with the book. I thought on first reading Ohlemann, and I certainly am convinced by reading Oliver, that, given a broad knowledge of pathology and general medicine (such as every student of ophthalmology should have) given in addition a substantial ground work of the special functions, symptoms and physical signs of ocular tissues in health and disease, ophthalmic therapeutics would still be a difficult subject to master, but there is no textbook (or no twenty text books) in which the treatment of eye diseases and the exhibition of drugs therefor,

## BOOK NOTICES.

well, so thoroughly, so systematically and so clearly given, as is of Oliver (Ohlemann). No ophthalmic surgeon, hardly any general practitioner can afford to be without it on his office desk.

A. B. H.

### CLINICAL YEAR BOOK.

FLÖGGE AND MERING, of Halle, Ministers——herausgegeben von Prof. Dr. Flögge (Breslau) und Prof. Dr. v. Mering (Halle). ebenter Band. Erstes Heft.

clinical year book, commissioned by the Royal Prussian Minister of Theology Education and Medicine. Edited by Prof. Flögge and Prof v. Mering. 7th Volume, 1 Series. Published by Gustav Fischer Jena. 4 marks.)

The book before me is edited to give circulation to two essays prepared under official instigation for the study of trachoma. The first is by Dr. Julius Hoppe. *The epidemic of trachoma and the means of attacking it in the district of Gumbinnen*, 40 pages and chart. The second, by Prof. Greeff, *A Study of Epidemic Eye diseases*, 118 pages. Both show, as well as anything possibly could, the thoroughness of German methods in study and even practice, but both show also the serious nature of the problem presented to us when that is made the subject of government and not left to the whim of local scientists and politicians. Probably the conclusion of most importance to ophthalmology in general, a conclusion drawn not alone from their present studies but from their earlier experiences as well, is the very positive agreement that trachoma and ocular conjunctivitis are by no means one and the same. The unitarian doctrine is absolutely discarded for the more modern and scientific classification, and an acknowledgement of the duality of conjunctival affection. That this is not universally accepted is illustrated by the form of government report still required by Prussia (since 1893, v. Hippel Senior). Hoppe gives it as follows:

not serviceable for military conscription.

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Acute conjunctival catarrh</li> <li>2. Mild chronic conjunctival catarrh</li> <li>3. Phlyctenular</li> <li>4. Granular (follicular) = Gr. (granulation) 1.</li> </ol> | $\left. \begin{array}{l} \\ \\ \\ \end{array} \right\} = K \text{ (catarrh) 1.}$ |
|---|--|

not serviceable for conscription.

1. Chronic conjunctival catarrh having increased discharge but without distinct granulations = K. II.
2. Acute or chronic gonorrheal conjunctivitis = Blennorrhoea.
3. Severe forms of granular (follicular) disease.
  - (a) Particular of upper fornix;
  - (b) of both lids, with abundant granulations, when swollen, and showing lost transparency or natural epithelial coverings;
  - (c) in which cicatrices, papillæ, or any distortion of lids, have appeared = Gr. II.

This is a unitarian classification, but admits of use by the dualist, as the latter, Hoppe makes his report. He examined many

districts and schools, instituted courses in practical diagnosis and treatment among the local physicians and prepared an immense statistical material for immediate use or future reference. Some of his conclusions but emphasize the prevailing opinion of trachoma. Little influence upon the disease is exerted by the time of the year, but the weather from day to day had the effect of increasing or of decreasing general catarrhs. Lack of culture and hygiene accounts for much of the disease. The disease increases with the age. Filth and ignorance are the foster parents of the disease. Others of his conclusions are not the usually accepted ones: Trachoma is so chronic that he saw no one single case of the acute infection; spontaneous cure is not unusual; one eye alone may be affected leaving the other absolutely normal. The influence on vision—even when pannus is present—varies, since in Gumbinnen the per cent. of trachomatous blind is much lower than in South Aurgory (.2217 per cent.).

His suggestions, too, are well worth study; he depreciates the ignorance of the laity concerning treatment, and advocates a greater enthusiasm among professional men for active therapeutics, as well as for insistence on better hygiene and education. That the disease is evidence and deeply seated, must be emphasized and the state itself make constant effort to attack it, but isolation is impossible—even if it were so, education and cleanliness are better for the people in the long run. The *school* must be continued and preserved, for no child, even if trachomatous, is helped morally or physically, by exclusion from school.

Such are a few of the notes I can make from this essay. It is a delight to find such a sincerity and earnestness and where unselfish enlightenment characterizes government action, I have no fear for the ultimate success of the battle against such a disease.

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The essay of Prof. Greeff is much more elaborate and exhaustive, for his research extends over both East and West Prussia, and he examined more than 7000 persons and gave many courses of instruction to the physicians of the territory.

The work is a masterpiece, and would well serve both as a text book for instruction on trachoma to our own American profession, and as a model to federal and state officers in its thoroughness of investigation and practicalness of treatment and suggestion. Greeff himself says that he and Hoppe (see above) are in exact agreement, so that I need not epitomize the conclusions of the larger essay; but Greeff, too, is a decided dualist, and his argument is so conclusive that I do not see how any one can longer maintain the unitarian doctrine, or pretend to trace any relation between trachoma and gonorrhea. That there is a debatable stone between trachoma and follicular catarrh is not denied, but while the follicle always tends to resorption and is innocent, trachoma always possesses the one and only essential characteristic of *granulation*, it is malignant, and tends unmistakably to destruction.



Greeff distinguishes four groups for clinical and official classification (following Hirschberg).

1. s. Suspicious cases (this alone may include cases of follicular catarrh, not yet progressed).
2. m. Mild trachoma.
3. i. Infectious form (with granulations).
4. d. Disastrous form, with pannus, cicatrices and all sorts of lid distortions.

He argues, too, for a universal retention of the name trachoma, or conjunctivitis trachomatosa, rejecting all other names, even granular catarrh, as not capable of conveying the accepted idea of trachoma; and he ingeniously refutes the tradition that this "Egyptian disease" had its origin alone in Egypt or was brought over from that country by Napoleon's army in the early part of this century. In fact, he finds it easy to prove that trachoma was well known in Russia and East Prussia long before Napoleon's time.

To show the thoroughness of the work, Greeff takes occasion (p. 62) to specify the micro-organisms to which we positively ascribe a specific conjunctivitis, namely, (1) Neisser's gonococcus, (2) Klebs-Loeffler diphtheria bacillus, (3) staphylococci and streptococci, (4) Fraenkel-Weichselbaum diplo-(pneumo)coccus, (5) Koch-Weeks bacillus, (6) Morax' diplobacillus; while on p. 138 he illustrates the type of epidemic we may expect (or actually find) from them; but the trachoma germ is not yet acknowledged, and until its exciting cause is found, no name is so good as trachoma.

Eight and seven tenths per cent. of all cases examined showed trachoma; in West Prussia the year before there were found 9.9 per cent. Probably at least 4 per cent. of the one and one-half million there have trachoma. A serious condition of things, but not helped any by school visitations written memorials. Even peasants soon learn that words don't cure sore eyes, and deeds must follow, if the "gradual westward march" is to be checked. Overcome filth and you kill trachoma, says Greeff, and he cites Förster's (Breslau) criticism that "a countess in velvet, with trachoma, means a woman with dirty underclothes and a nasty handkerchief."

There are so many other fascinating points that I must leave them all for him who can read the book through. Photography is called to the aid of the medicine by using such illustrations to enliven practical causes (p. 101) and the simplest as well as the most complex treatment, both for general practitioner and specialist, are given in detail.

Greeff opposes too frequent examination of schools, but supports the idea that government interference, as in small pox by vaccination, is warrantable. He has the highest praise for Knapp's roller forceps, and advises caution in resorting to Kuhnt's radical excisions.

The last 25 pages discuss several epidemics of conjunctivitis near Bremen, all of which were used by the yellow journals of Germany as fit material for excitement over Egyptian ophthalmia, but Greeff soon showed that there was nothing more than a simple

follicular catarrh, and uses the experience as a text to decry both the excitement over epidemic eye disease and unnecessary examination of school children, or their exclusion from school for any such cause.

I acknowledge with gratitude the courtesy of the publisher (Fischer Jena) for the courtesy of the book for the ANNALS. The matter is well worth reading, doubly so for the five papers, clear type and excellent care with which it is edited. A. B. H.









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## HISTORICAL NOTES OF STRABISMUS AND OTHER ANOMALIES OF THE EYE MUSCLES.\*

GEORGE T. STEVENS, M. D., Ph. D.,

NEW YORK.

Of course, only the notable defects in the directions of the eyes were likely to have been taken into account by the ancients. The lesser anomalies were unobserved until very recent times.

Of the notably conspicuous defects, there was the dubious gaze of the diverging squint, with one eye at the front, the other at the flank; then there was the sinister and contracted visage of the converging squint, with the eyes emulating the example of the branches of a pair of scissors; and lastly there was the convenient vertical squint that enables its possessor to keep "one eye on the pot and the other up the chimney."

Only these forms of deviation from the positions most agreeable to see claimed the attention of the observer until quite within our own day.

We may then divide our subject into two periods of time, each of which will be characterized by the forms of defects observed. Thus, the first period will be that of the recognition of strabismic affections while the second period will include also the recognition and study of the lesser affections which are now known as those of heterophoria.

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\*Annual address delivered before the Western Ophthalmologic and Oto-Laryngologic Association, at New Orleans, February, 1899.

**First Period—Strabismus.**

In the earliest medical writings mention is made of strabismus. Yet, as it was in the times of those early writings for the most part regarded as a permanent deformity rather than as a defect which might yield to treatment, only meager space was assigned to its discussion.

Hippocrates, whose works date about twenty-two centuries ago, mentions distortion of the eyes as one of the consequences of epilepsy in children.\* He also recognizes it as an inherited defect, reasoning that, as children with bald heads are born to bald-headed parents, so parents with squinting eyes have also squint-eyed children.

Celsus, in the first century of our era, devotes a short paragraph to strabismus and paralysis of the eye muscles.

It is only after some centuries that we find authors giving more attention to the defect as one susceptible to amelioration by proper treatment.

Paulus Ægineta, a celebrated Greek medical writer of the seventh century, recommended the wearing of a mask which should extend below the nose and through which there should be an opening for each eye so placed as to induce the eyes to assume direct positions in order to see through these openings.

And Ambroise Paré, the pioneer in scientific surgery of France and whose works were published from about 1561 to 1577, describes strabismus (squint eyes) as a distortion of the eyes with inequality of vision. It originates, he says, when the cradle is placed in such a way that the child sees the light on one side, or when the nurse squints and the child imitates her. For treatment he adopts the mask of Paulus Ægineta and he also recommends spectacles of horn attached to a leathern band and perforated in the middle of each of the discs of horn.

Paré's etiology of squint has come down through the centuries and even at the present time there are oculists who claim to be *en rapport* with modern ophthalmology who gravely inform the parents of their young patients with devious directions of the visual axes that the fault was with the cradle or with a nurse or companion.

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\*The Genuine Works of Hippocrates, by Adams, New York, p. 217.

Later still Antoine Maitre-Jan\* states that some authors attribute the malady to the crystalline lens, believing that it is situated irregularly or that it is pushed to one or the other side; while other authors, he says, regard the trouble as one involving the whole eye or attribute it to certain imaginary vices of the visual spirits; still others regarding it as a spasm or retraction of some of the muscles of the eye.

The learned author himself accepts none of these theories but places the defect to the credit of the cornea as one of its many affections. He comprehends squinting in the same class as myopia, and says that the two conditions are really one.

The author then discourses learnedly on the refraction and adds that it follows also that those who squint see objects larger than those who do not, and that they see better at night and can read better by moonlight.

Indeed there appear so many advantages in the strabismic condition that the distinguished author makes no suggestion for improvement.

For much of the neglect and many of the misconceptions regarding the nature of strabismus in early times we may, perhaps, find an explanation in the fact that during the early periods of what is known as medical history it was unlawful and sacriligious to make dissections of the human body. This difficulty had, however, been in a great measure overcome in the time of the writer just quoted, and indeed, some of the most beautiful engravings of dissections of the eye and its muscles are to be found in the works of the seventeenth and eighteenth centuries.

It was in the very beginning of the nineteenth century that Tenon gave to the world his descriptions of the anatomy of the parts within the orbit,† which have remained classic till the present time. On the other hand the fact that dissections had not shown any disease or appreciable defect of the muscles toward which strabismic eyes turned, may have caused the withdrawal of attention from the muscles as a direct cause of the defect and thus have

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\**Traité des maladies de l'oeil*, 1707.

†Tenon. *Memories et d'observations sur l'anatomie, etc.*, de l'oeil, Paris, 1806.

delayed the practice of the treatment adopted during much of the present century.

Erasmus Darwin\* asserts that squinting is generally owing to "one eye being less perfect than the other; on which account the patient endeavors to hide the worst eye in the shadow of the nose that his vision by the other may not be confused.

"Calves, which have an hydatid with insects inclosed in it in the frontal sinus of one side, turn toward the afflicted side; because the vision on that side by the pressure of the hydatid becomes less perfect . . . ."

In regard to treatment he continues: "If the squinting has not been confirmed by long habit, and one eye be not much worse than the other, a piece of gauze stretched on a circle of whale bone, to cover the best eye in such a manner as to reduce the distinctness of vision of this eye to a similar degree of imperfection with the other, should be worn some hours every day, or the better eye should be totally darkened by a tin cup covered with black silk for some hours daily."

In more recent time Rossit† reported his researches on the pathology and treatment of strabismus which led him to the belief that, in strabismus, the orbital cavity "instead of having the form of a right pyramid as is natural, has that of a pyramid more or less oblique," and his treatment was similar to that of Ægineta and Paré.

Thus we have, by recalling the writings of representative authors, sketched an outline of the history of the views entertained by the learned of their times from the earliest authoritative writings in medicine up to the era of an entirely new departure in respect to the views concerning the etiology and treatment of this defect. It is easy to see that even up to the beginning of the present century the ideas of those of highest authority were, in respect to both the etiology and treatment, crude and confused and that they had scarcely been modified in essential respects from those of Paulus Ægineta in the seventh century. It may be added that the subject of strabismus during a

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\*Zoonomia, 1801.

†Mem. Acad. Scien., Turin, T. 34. Also Neue Unters. und Erf. uber das Schiel, u. s. v., Gottingen, 1841.

period of many years preceding the epoch of which we are presently to speak found only rarest mention in the periodical literature of the times.

Before entering upon an account of the new era, however, we may for a moment consider the relations of two persons, of most opposite character, to the progress of events in this line of surgical research.

Rather more than a century ago an itinerant oculist, John Taylor by name, announced in a book which he distributed on his itineraries, and through newspapers, that he practiced the straightening of cross eyes by operation. The title of Taylor's pamphlet was, "*De Vera Causa Strabismi*,"\* and he related the results claimed by his operations.

Taylor styled himself oculist of King George II. of England. Elsewhere he styled himself papal oculist, ducal and court oculist with other high sounding titles.

The following announcement† of these operations appeared in the *Mercury of France*, in June, 1737. "Dr. Taylor, oculist to the King of Great Britain, has just arrived in Paris, at the London Hotel, Rue Dauphine, where he proposes remaining till the beginning of July, after which he will leave for Spain. He requests us to publish the discoveries he has made of straightening squint eyes by a slight and almost painless operation, and without fear of accident."

Nearly twenty years later, in 1756, Heuerman, a German surgeon, published a work entitled "*Abhandlung der neusten Chirurgische Operationem*" in which the author thus mentions Taylor's claims.‡

"Taylor has also proposed to cure squinting by the division of the tendon of the superior oblique muscle of the eye. But this deformity is not, in every case, produced by the contraction of this muscle; and moreover the inferior oblique muscle is apt to draw the eyeball in the opposite direction when the superior one is divided, thus giving rise to a new sort of squinting. In addition to this, the recti muscles, the contraction of which often

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\*Paris, Lisbonne, 1738.

†Walton, *Diseases of the Eye*, p. 366.

‡*Medico-chirurgical Review*, 1842, p. 194.



occasions squinting, cannot be easily cut across, in consequence of their situation. We thus see that the operation performed by Taylor can only be of temporary benefit; and we cannot expect that patients will submit to it, seeing that it is attended with a good deal of pain, and its results are so uncertain."

Lucien Boyer\* quotes from a long forgotten address by LeCat at the *Academie des sciences, belles-lettres et arts*, of Rouen, the following narrative.

The writer, after noticing the danger of charlatanism which should be met not only by the medical profession but by the laws, illustrates his theme by relating that he had seen Dr. T. whose bearing and accessories he thus describes:

"This refined and amiable man came to Rouen the — and within a few days became the object of general admiration. He had an arsenal of superb instruments and handled them with great dexterity. He showed portfolios filled with authentic and highly commendatory credentials. The door to his hotel was guarded by soldiers and it was necessary for one to have an introduction in order to visit him. His operations were done in the midst of a brilliant circle of select persons.

"The great operation, the most marvelous of all, was that by which he proposed to straighten squinting eyes. His method was as follows: with a needle of silk he caught a portion of the conjunctiva of the squinting eye at the inferior part of the globe and having made a loop of this silk he used it to draw toward him that portion of the conjunctiva which it included, which he cut with the scissors; then he applied a plaster to the sound eye; the squinting eye at once righted itself and every one cried out, 'a miracle.' "

"I availed myself of the freedom which he accorded me to inquire the motive for an operation which appeared to me to be absolutely useless, not to say dangerous. He replied that an eye only squinted because the equilibrium between its muscles was destroyed, and that to re-establish this equilibrium it was only necessary to weaken the muscle which dominated the others and that this is what he

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\*Recherches sur l'operation du strabisme, 1842, p. 38.

did in cutting one of the nerve filaments which was distributed to this too powerful muscle."

Whatever may have been Taylor's method, whether he divided the superior oblique as Heurman asserts or the inferior oblique as others state, whether the brilliant and clever man described by LeCat really only cut a fold of conjunctiva, it is certain that Taylor's work had no influence in introducing the surgical method of treatment to the world. If he divided one of the oblique muscles as he was supposed to do, he did not correct the squint and if he simply divided the conjunctiva and some supposed nervous filaments which were assumed to supply a muscle he still did not cure the squinting. There remain two possibilities: first, that the secret of the whole operation lay in the fact stated by Lecat: he covered the sound eye with plaster; the squinting eye became straight and the people cried "a miracle." Second, and it is much more probable, however, that he cut the internal rectus, but that he did not confide too much in his not well informed critics.

The story of Taylor is interesting for what it suggests, first in regard to himself and second in regard to the medical profession. If Taylor really corrected squint by an operation on a lateral muscle, he would have acquired enduring fame had he made his discovery permanently known by an exact and honest description of his methods. If he carried the idea that he operated upon an oblique, when he in reality cut an internal rectus, he committed suicide for his reputation. If, on the other hand, he really cut an oblique, he made no cure and therefore has no claim to be regarded as a pioneer in the surgery of strabismus.

There is a view of the whole subject, however, which is not to be lost sight of. That Taylor was a man of learning is not to be doubted. He had studied at Leyden and at other universities. That he was a charlatan is also true, but the age was an age of charlatanism. His works which remain to us show that, breaking away from the theories of Maitre-Jan and of all his predecessors, he had correctly appreciated the cause of strabismus. That a man of undoubted ability and who correctly interpreted

the phenomena of squinting should have resorted to a cheap trick which must have been exposed without delay, while he absolutely failed to practice the principle which he certainly understood, seems incredible.

That no published description is known or seems to have been known is certain. But it is too true that in medical, as well as in other fields of science, a truth not acceptable or not understood by the contemporaries of the discoverer is either distorted in transmission or altogether lost to the world by neglect. The fact that we know of no detailed description is not evidence that there was none, and the description of the distinguished Le Cat would not be further from a true comprehension of the actual facts, in case Taylor really performed a tenotomy of the internus, than is shown by distinguished authorities of the present time when they attempt the description of some procedure with which they are not fully in sympathy.

The history of Taylor's claims is therefore interesting in its bearings upon some characteristics of the medical profession.

The claim that strabismus could be corrected by relaxing "the too dominant tendon" was not only rational, but would seem to be one which should have been seized upon by the surgical mind. Doctors are, however, like other men and the fact that Taylor was an itinerant and therefore assumed to be a man of no scientific authority, instead of setting men to think in the right way, prompted them only to oppose the idea as unscientific.

Let us now turn to a person of widely different character.

The mention of the name of Charles Bell suggests at once to the mind a series of researches in respect to the anatomy and physiology of the nerves which were in the highest degree epoch making. It is needless to mention any of these remarkable inquiries and discoveries save a single series of observations relating to the movements of the eyes.\*

In his experimental inquiries Sir Charles divided (1) the superior rectus in a rabbit and felt some disappointment on

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\*Read before the Royal Society, March 20, 1823. Published as a chapter of *The Nervous System of the Human Body*, 1830.

observing the eye remain stationary. Shortly afterward on looking at the animal he saw "the pupil depressed." The animal could not raise the eye.

(2) On opening the eyelids and irritating the eye of which the superior rectus had been divided, the eye was turned up; showing, as the experimenter believed, that though voluntary motion was lost, involuntary motion remained by the influence of the obliques.

(3) Wishing to ascertain if the oblique muscles contract to force the eyeball laterally toward the nose, he put a fine thread around the tendon of the superior oblique muscle of a rabbit and appended a glass bead to it of a weight to draw out the tendon a little. On touching the eye with a feather the bead was drawn up.

Experiments made on the dead body had shown him that the action of the superior oblique muscle is to turn the pupil downward and outward and that the inferior oblique "reverses this action of the eye." He concluded from the bead experiment that the combined action of the two oblique muscles is to draw the eye to the nose.

(4) He cut through the tendon of the superior oblique muscle of a monkey. He saw no change in the appearance or movements of the eye.

(5) A similar result followed section of the inferior oblique.

From these experiments he considered it proved that division of the oblique muscle does not affect voluntarily motions by which the eye is directed to objects, and that division of the recti does not prevent involuntary motions.\*

In the experiment on the superior rectus muscle the learned investigator saw the eye dropped from its normal direction yet still able to move upward. We are led to wonder why so brilliant an anatomist and physiologist could have turned away from the evident teaching of his own experiments. We have an instance of one who has placed before himself all the elements of a grand discovery, but who turns away from the positive to the negative teachings of the conditions which he has induced. Had an anatomist desired to prove to himself and others that squinting

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\*In the summary of these experiments the words of the author have been employed as far as it has been found convenient.

could not be cured by section of the obliques these experiments would have been satisfactory to him.

It not infrequently happens that the state of mind in which an inquiry is entered upon controls the result whatever may have been the facts evolved by the inquiry.

We now enter upon the period of actual discovery of the surgical treatment of strabismus

The process now known as the operation for strabismus was suggested and described by Stromeyer, professor of surgery in the University of Erlangen, in 1838, and the first authenticated operation was executed on the 26th of October, 1839, by Dieffenbach, in Berlin.

A full appreciation of these two stages in the discovery of what was then called ocular myotomy requires some knowledge of the contemporary tendencies of surgery. The time was emphatically a period of myotomies. The two names which figure most prominently in the introduction of the strabismus operation are also those of two among the most distinguished myotomists of the time. Stromeyer, whose first sub-cutaneous tenotomy of the tendo-achilles, in 1831, had fallen far short of success, had yielded to no discouragements, but had extended the process to all parts of the human body, and Dieffenbach claimed to have myotomized nearly forty different muscles, some of them a great number of times.

M. Jules Guerin, "le Grande Myotomiste" of the Orthopedic Institute of Paris, whose friends claimed for him a large measure of credit for the introduction of the strabismus operation, in an article in the *Gazette Medicale* gave a list of the parts which he had divided by the method of sub-cutaneous incision which looks almost like a catalogue of the muscles of the trunk, neck, upper and lower extremities.

Such was the drift of surgical thought and action when, in 1838, there was published, at Hanover, a treatise on Sub-cutaneous Orthopedics, by Professor L. Stromeyer,\* in which he showed that strabismus might be regarded as a vicious contraction of the eye muscles and that the same treatment might be applied to it as to club-foot. He fully described the procedure by which the operation could

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\*Beitrag zur operativen Orthopädie U. S. V., Hanover, 1838.

be done and reported the effect of many tenotomies done by his method on the dead subject. For a time no attention seems to have been attracted to Stromeyer's views of squint but at length it was noised abroad in all lands that Dieffenbach, of Berlin, had applied the method of Stromeyer to the living subject.

In February, 1840, Dieffenbach communicated his discovery to the French Academy of Sciences, which at the time was offering the Moynton prize for a notable discovery in medicine and surgery, but to the commission having the matter in charge the claim of the Berlin surgeon appeared so improbable that it was regarded rather as a burlesque than a serious claim for the award. Still later Dieffenbach forwarded a second communication in which he not only reported many cases but gave the minute details of the process and of the progress of the new operation.

From this time the medical journals in which the mention of strabismus had been only at intervals of years, teemed with articles on the now interesting topic.

The commission of the Academy of Sciences could now no longer withhold its recognition of the great value of the discovery and in awarding the prize the commission reported: "The commission has the honor to propose to the Academy to award Messrs. Stromeyer and Dieffenbach a prize of six thousand francs to be divided between them. They awarded it to M. Stromeyer for having first conceived and executed the operation of strabismus upon cadavers, and to M. Dieffenbach for having first successfully practiced the operation upon the living man."\*

It will be interesting and profitable to inquire into the methods and principles involved in these early operations, and to trace any modifications which may have resulted from larger experience and fuller examination of the subject.

Dieffenbach's first operation, described in *Medicinische Zeitung*, Nov., 1839, omitting the details of fixation of the eye and the lids, details not essential to the method of operating, consisted in "cutting through the conjunctiva and separating the connective tissue," then "dividing the

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\*Space does not permit of mention of the many claims which were set up for priority as soon as the operation became a success.

internal rectus muscle using scissors, *close to its insertion*. The eye was immediately drawn outward by the external rectus, as if it had received an electric shock; and in another instant became straight . . . .”

In his second case “The operation was performed as in the last case, the conjunctiva being cut through and the sclerotic laid bare to the extent of four lines, in order to bring the muscle into view, which was cut with a curved scissors as before.”

Mr. P. Bennett Lucas, one of the earliest of English surgeons to perform the operation of Dieffenbach describes his operation in the *Provencial Medical and Surgical Journal*, Oct., 1840. After dividing the conjunctiva and the connective tissue to the desired extent, “The blunt hook being inserted beneath the muscle, the operator transfers it to the left hand and having brought the tendon into view, he divides it with a sharp pointed pair of scissors *as close to its insertion as is compatible with the safety of the sclerotic.*”

Mr. Liston also, in the London Lancet, 1840, says: “With a little dissection the muscle is seen just as it ends in its tendon, and with a pair of scissors it is cut across *close to its insertion into the sclerotic.*”

It thus appears that in the earliest history of the operation it consisted essentially of a division of the conjunctiva over the insertion of the tendon, usually about a third of an inch in extent, introducing a probe or blunt hook beneath the tendon and dividing the latter with a pair of scissors *close to the sclerotic.*

The cure of strabismus soon became a show operation and while the political press teemed with columns of sensational descriptions of the operation, surgeons plunged with a will into a system of charlatanism and surrounded themselves with admiring crowds to witness the miraculous changes which their art could produce. As is usual when surgery is done for popular applause, the question of the best method for obtaining best effects became an entirely secondary one and tenotomies soon gave place to myotomies. Dieffenbach himself led in the degradation of his operation and asserted that the further back the muscle is divided the more effectually will the more pronounced



cases of strabismus be relieved. "If," he says,\* "the conjunctiva be divided over a greater arc and toward the back of the globe, if the cellular tissue be extensively separated and the muscle be detached far back and divided at its middle, then the eye, even in cases in which the whole cornea was hidden in the internal angle, stands quite straight after the operation."

The practice of dividing the tendon at some distance from the sclera was continued for a number of years. The text and illustration descriptive of the operation in the edition of 1854, of McKenzie's *Treatise on the Eye*, shows the section of the tendon several lines removed from the sclera. That a reaction against the operation set in was but the legitimate result of these extravagant destructions of the rotating powers of the eyes.

It was in this stage of repudiation by a large proportion of conservative surgeons that the great authority of von Graefe called his colleagues to a return to a more conservative policy. He advised that the incision in the conjunctiva be made near the cornea, that the section of the tendon be made close to the sclera and that in all but cases in which extensive effects were required, a suture should be introduced in the conjunctival wound. In pronounced cases he divided the whole of the tendon and all the surrounding connective tissue with the capsule; in less pronounced cases the connective tissue was less completely divided, and in slight cases he severed the tendon except an upper or lower border of a lateral muscle or an inner or outer border of a vertically acting muscle, a process which he termed partial tenotomy and which must of necessity have been accompanied by a tilt of the globe, a condition as little to be commended as the myotomies of his predecessors. In all essential features this operation became the standard operation in all countries and with slight modifications representing the fancy of individual operators has remained the classic operation in all the text books to the present time.

A moment's reflection will show that the operation as laid down by Graefe and repeated in the current text

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\*Casper's *Wochenschrift*, July, 1840, quoted in Braithwaitel's *Retrospect*.



books is that executed and described by Dieffenbach, Lucas, Liston and other pioneers in the operation, and that the real difference between the modern procedure and that of the earliest operators, consists in the details of holding the lids apart and of fixing the eye.

It will not be without interest to compare the text and illustrative figure referring to the operation in the text book of Desmarres, 1847, and the corresponding text and illustrations from the more modern text books.

It will not be out of place here to inquire into the exact meaning of one expression which characterizes the rule given by the early operators and that given by Graefe. We are told by both authorities to perform the section of the tendon as nearly as possible to the sclera. And the question arises as to the precise meaning of the phrases in which this direction is given.

If we are to accept the illustrative figures which accompany the modern text books as representing the operation, if we are to accept the ordinary practice of the great majority of surgeons who follow the teachings of Graefe, and especially if we consider the instruments which are generally figured and used, it becomes evident that these phases are intended to teach that the section is to be made in the near vicinity of the sclera but that a dissection of the tendon at its very union could not be intended. Such a dissection would be almost out of the question with the instruments employed by Graefe and which are still quite in vogue.

As a matter of fact in these operations, done according to the prevailing method, the section is made at a few millimetres from the globe.

From the etiological point of view there has been, during the half century and more since the introduction of the surgical treatment of squint, omitting for the present any reference to any suggestions of my own, one notable doctrine, that of Donders, which he formulated as follows:

1st. Strabismus convergens almost always depends upon hypermetropia.

2nd. Strabismus divergens is usually the result of myopia.

These propositions were at once universally accepted,

yet there is to-day quite sufficient reason for revising the judgment of the profession for there is adequate ground for saying that the doctrine of Donders rests upon neither theoretical nor practical grounds. With the exception of the doctrine of Donders the accepted views respecting the etiology of strabismus have in the profession at large undergone slight change during the half century.

In the meantime if some views which I have myself advanced are at least new, it is not my purpose to discuss them in this connection, beyond saying that by the aid of the tropometer and the clinoscope we may now arrive at the conditions underlying the great majority of cases of squint with so much certainty that we are able to relieve the defect without inducing another as was the universal rule under the former regime.

In the half century, much careful work has added to the stock of precise anatomical knowledge of the muscles of the eyes and their insertions. Observations from a physiological standpoint have also furnished material not accessible a half a century since which permits of more correct conclusions.

The different varieties of concomitant strabismus were described in the years immediately following the introduction of the operation for tenotomy of the recti muscles much as they are to-day in the best text-books.

### Second Period—Heterophoria.

*Anomalies of the Eye Muscles Less than Strabismus.*  
—Leaving for the present the subject of strabismus we may trace the history of the progress of knowledge in respect to those anomalies of the eye muscles less conspicuous, but as experience is proving, no less important, which are at the present time known under the generic term HETEROPHORIA.

In 1857, Graefe called attention to a form of strabismus, less evident to the general observer than the recognized form, which he termed *latent strabismus* or insufficiency of the internal recti, which was characterized by an ability to hold the images of the two eyes in union while the gaze was directed at distant objects, but by the deviation of one eye outward when a near object was looked at. Thus, if a

pencil were held in front of the subject of this defect and the eyes were directed toward it, the axis of each eye appeared to be directed to the object until it approached as near as the reading distance, when one eye deviated outward. This condition he found mostly in cases of myopia of high degree and, as just mentioned, he called it "Insufficiency of the Internal Recti Muscles."

There is no reason to suppose that Graefe designed by this term to intimate that the internal recti were weak; that interpretation was the result of an imperfect understanding on the part of some who did not fully comprehend the meaning of Graefe's language. Graefe's meaning was, that in these cases of myopia, where the object must be held close to the eyes and the tendency of the lines of sight was outward, greater than normal tension was required of the interni and they were insufficient for the unusual task. This is the meaning which runs through all his writings on the subject.

This condition of insufficiency of the internal recti he regarded as a cause of asthenopia equal to hypermetropia and he proposed methods for examination and treatment. In examining, he used the method already mentioned, the fixing of the gaze upon a pencil as it was made to approach from a distance.

For more accurate measurement of the deviation a prism was held with its edge up before one eye while the patient looked at a card held a foot or more in front of the eyes and on which was drawn a vertical line with a dot in the middle. If this line separated and the dots parted heteronymously there was insufficiency of the internal recti to the extent of the value of the prism which, held horizontally, would throw the two dots on a single line.

Graefe employed spectacles of prisms with their bases in for the relief of this condition but he preferred the more radical method of dividing the external rectus of the deviating eye or, more rarely, of both externi, to the extent that the dots would continue on the one vertical line. He was willing to sacrifice single vision at the distance, causing hymonymous diplopia by his operation, for since these people were mostly myopic the hymonymous double images would, in his estimation, cause little inconvenience, while

the object sought, the ability to converge at near points, would be accomplished.

This was practically the whole doctrine of "insufficiency" up to the time when more especial attention was called to these conditions by myself. In all the text books and in all the current literature, so far as the subject received any notice, muscular asthenopia was, "insufficiency of the interni."

It is true that there were a few references to "insufficiency of the externi." It requires but a glance at these references to see that they related generally, if not in every instance, to moderate cases of converging strabismus.

More than twenty years ago I reported operations for the correction of definite degrees of "insufficiency of the externi," much less than strabismus. In 1881, at the International Medical Congress held in London, I reported other such cases of operative treatment, and in the essay which received the award at the competition on the subject of Functional Nervous Diseases offered by the Royal Academy of Medicine of Belgium, 1883, three hundred and fifteen cases of operative treatment were reported.

These were the first single cases and this was the first series of cases of operations for definite "insufficiencies of the externi." In the prize essay just mentioned was also the earliest recognition of the condition now known as hyperphoria, as distinguished from vertical strabismus.

The proposition which constituted the central thought of that essay was, *that difficulties of the adjustments of the eyes are a source of nervous trouble and more frequently than other conditions constitute a neuropathic tendency.*

In the development of this proposition, which has continued during all these years, a refinement of methods of examination, of terminology and of treatment have led to results which in the early stages of the investigations were little anticipated.

Since my colleagues have permitted me to labor as the pioneer in this field, I trust that it will not be thought unbecoming if I trace the steps which appear to me to have brought the subject from a vague, ill defined and incorrect knowledge of a single element to the dignity of a technical system. And since, by virtue of this office of pioneer, the new observations have been so largely the results of my

own investigations, I may, as I proceed, without incurring the charge of egotism, mention the stages of progress as I have myself suggested them.

When once the importance and the frequency of occurrence of the anomalies which had previously been practically, if not absolutely unrecognized, were seen, it became evident that there might be still other conditions which were even yet obscure and that these new anomalies constituted a class while the more obvious forms of strabismus constituted another class. This led to a system of classification and of terminology which has been so widely adopted that it may be regarded as a part of the science.

But with the refinements of diagnosis came refinements of therapeutics and operative procedures. The method of Dieffenbach and of Graefe, of severing a tendon from its insertion was seen to be a mutilation. More delicate, more exact and far more effective operative methods were adopted, and to this end more delicate and far better constructed instruments were required.

In examinations, systematic accuracy was sought in the use of the phorometer.

Notwithstanding all these refinements it was evident that there were anomalous elements in many of the cases which were either outside those which had already been classified or that these known elements were not completely understood. It now seems curious that with this knowledge and with an earnest desire to solve the problem of the exceptions to the ordinary rules, the conditions which we may now easily discover by the tropometer, were not appreciated until the conditions of heterophoria had been diligently studied during more than fifteen years. Before the tropometer was brought into use, however, the upward and downward directions of the optic axes had been recognized and tested rudely and had even been found to be important elements of strabismus.

It may be interesting to recall that some years before the tropometer became a practical instrument, the large prism which is now a part of the tropometer which I am accustomed to use daily, was made for me as the first step in the construction of an instrument for determining just such measurements. From time to time it was resurrected from the drawer where it was hidden only to be returned

wrapped in its tissue paper when some mechanical difficulty appeared to make the instrument impracticable. At length, when the subject pressed too urgently to be longer dismissed, the instrument came into existence and with it such a flood of light upon many obscure questions that for a time it seemed as though the key had been found which would unlock the secrets which had been so long concealed.

A year of work, while progressively showing new revelations and fresh explanations of many problems, showed that beyond the phenomena shown by the phorometer and beyond those revealed by the tropometer, there must still be a field of research not yet opened up.

Helmholtz and other philosophers had investigated from a physiological point of view, the directions of the apparent meridians of the retina. Notwithstanding the crudity of his methods and the paucity of observations, Helmholtz had based his grand theory of the horopter on the results of his researches respecting his own eyes. The fact that the adjustments of his eyes might not represent the normal for ocular adjustments did not occur to him and was not taken into account. When, in listening to the conversation of a bore he incontinently multiplied his misfortune by seeing two bores before him, or when, after a frugal dinner, at which wines had cut no figure, all his friends about the table assumed the aspect of Siamese twins, he attributed the phenomenon to no defect of his own eyes but thought that it was the way that eyes were made. It was simply a phenomenon in physiological optics. Hence, failing to realize his own visual peculiarities, he drew conclusions from his observations which could not be verified by others, and thus one of the masterpieces of his great genius was rejected as of no physiological importance, as, in a technical sense, it really was.

It was in considering how it happened that this grand labor had failed, that the idea of a practical and exact method for making the essential examinations was suggested. The result was the clinoscope. It was devised as an instrument for the study of a technical physiological phenomenon. It soon became the means for making a class of examinations of the most practical character which go farther to explain the phenomena, not only of

heterophoria, but of strabismus than all the instruments and means of examinations that have gone before.

An address of this character is not the place for detail. It is only possible to touch upon generalities and those only in most comprehensive terms.

Yet, to illustrate what is meant by the remark just made, I will venture a single detail as an example.

For many years it has appeared to me that the condition which we know as exophoria is not an ultimate and independent condition. This view has more than once been expressed in my writings and I have hoped that the reason for its manifestations might be discovered in some more primary state. If now we search for that primary state by the aid of the clinoscope, we will be likely to find that the vertical meridian of each eye leans outward,\* that is, there is positive declination in each eye. Now, if we consider for a moment the legitimate result of such a position of the vertical meridians, an explanation of the exophoria will be at hand.

There is no stronger visual impulse than that of maintaining the uprightness of the images perceived by the eye. A leaning of the image of one eye or those of both eyes means to the possessor of that or those eyes that the earth has lost its equilibrium, that walking is difficult or unsafe and that surrounding buildings threaten to fall. Compare, in this respect, the state of the patient with paralysis of an oblique muscle. To avoid this most unpleasant impression the muscles which are most influential in rotating the eye upon its axis are brought into active contraction. With the contraction of these muscles something beyond the simple rolling of the eye upon the optic axis occurs, namely, a turning of the eyeball down and out. In other words, if, with positive declination of the vertical meridians of the two eyes the horizontal and vertical meridians are forced into the appropriate positions for receiving the horizontal and vertical lines of images, there will result a tendency of the eyes to swing outward in proportion to the amount and symmetry of the declinations. Practical observations in large numbers have shown that this is the

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\*Among the cases usually met with in private practice the opposite condition, negative declination, is much more rare, for ethnological reasons.



general law of exophoria. Others of the deviating tendencies and of the actual deviations of the eyes can be explained on similar principles, and I am sure that I shall make no mistake in saying, that when the excesses of vertical rotation of the eyes are considered in connection with the normal declinations of the retinal meridians, it will be no longer necessary to perform the well-known and standard operations for converging or diverging squint.

This statement, while strictly conforming to the theory of the action of the muscles, is not an hypothesis built solely on that theory, but is the actual growth from the experience of every day work.

Thus, by the knowledge and the proper interpretation of the vertical rotations of the eyes, as shown by the tropometer and by the corresponding knowledge and interpretation of the relations of the vertical meridians to the cranium as revealed by the clinoscope, we are able to place the various phenomena of heterophoria and of heterotropia in their exact physiological relations with each other, and to discover that various forms of anomalies are not isolated facts, but a class of phenomena so well arranged and so interdependent that a knowledge of them fairly constitutes a science.

Let it not be supposed that the existence of such a science has its bearing simply in the realm of the immediate affections of the eyes. The influence of this science extends as far as the jurisdiction of the nervous system.

The conservatism which comes with a good many years of hard experience not by any means free from sore disappointments, does not lead to exuberant declarations of things hoped for, but which are in reality only the active workings of a lively imagination. I speak the words of truth and sobriety when I say that you, oculists, will in the near future hold closer relation to the general physical well being of your patients and of the community than any other class of medical practitioners.

Glance for a moment in a single direction.

There is a class of boys and girls who, whether standing, walking or sitting, throw the forehead far in advance and the chin into the breast. They are everywhere, especially in our northern states. Intellectually, they are the brightest of their class. Their shoulders bend with their



heads and they are charged by their friends in constantly reiterated exhortations to stand up straight and hold the shoulders erect. No amount of admonition does any good, they see easier when the head is advanced. If you examine these young people you will find by the tropometer that they all have the eyes adjusted for a plane much higher than the horizon and that in the extreme cases there is notable anomalous declination. It is the penalty for a head in which the process of evolution has carried the axes of the orbits too far from the original low plane of the distant ancestors of these young persons.

Can you change the pose of these young people? In a twinkling, by a slight relaxation of the superior recti muscles, in which you at the same time correct the declination you will lift the chin as if by magic. But what harm can come from the projecting forehead and receding chin? Is it not easy to see that the position of the head causes the upper air passages to shut like a valve? The hinge is at the larynx. Not all such persons suffer the full penalty for this restriction in the act of respiration, but too many do.

If we visit one of the modern hospitals for consumptives the most striking thing to a close observer will be this prevailing pose of the head, and this mechanical obstruction of the larynx.

Can those heads be raised and could those shoulders have been made erect before they finally caved in? In one moment by a safe and painless process. Would your patient have had consumption had you done this in time? I can only say that by the correction of the anophoria, and of the declination which sometimes has a like effect on the pose of the head, you would have accomplished more than any change of climate or any medical regime that could have been prescribed.

Perhaps some one will reply, "Consumption is the effect of the presence of bacilli in the lungs."

You have seen a field where a farmer has just burned his piles of brush. You have observed the blackened soil sprinkled with the white ashes where the brush heaps were burned. If you pass the same place the next year or the year after you will see that where the fires were are thick masses of the purple flowering fire weed—the epilobium—

completely covering the fired spots. It grows no where else in the field. But the epilobium seeds were carried by the wind all about. Why do they spring only where the soil has been burned? The soil of these spots is exactly suited to the growth of the epilobium just as the mucous membrane in the quiet eddies of a half filled lung is best suited to the propagation of the consumption bacillus.

It is very certain that you do not often see consumptives who hold the chin high in the air. In other words, we do not see consumptives whose eyes are adjusted below the plane of the horizon. You can adjust the eyes for the plane of the horizon, or if you wish, which I hope you would not, for a plane far below it.

This is but a single glance in a single direction and one may find startling truths in many directions if one will look with the mental vision open to what is to be seen.

If it is thought that my picture is a fancy sketch it will require no very long series of observations, if one observes well, to reach the conclusion that I have drawn but a rude outline of a realistic portrait.

Looking then, over the great field which is opened by the knowledge of the relations of the eyes to the general nervous economy, we see that when the first eye flew into place under the instruments of Dieffenbach, there was started a course of investigations which, with varying fortunes of halting, retreating and advancing, has led to results which are infinitely more far-reaching than appeared to his astonished vision, results which it is your province and your privilege to carry to higher and yet higher attainments.

That branch of medical science which brings its votaries in closest relations with the study of the highest of physiological actions, and with the solution of most interesting questions of physiological psychology and of physiological optics; with the study of the expressions of the face and with the types of the cranium, and which, therefore, leads to interesting and practical investigations in physiognomy and craniology; which is in the highest sense both mathematical and mechanical and which demands of its practitioners the highest originality of method and the greatest refinement in execution; which requires of its servants ability to adjust themselves to constantly recurring new

situations and to form logical conclusions from their personal observations, leading them out of the beaten path into new and enticing fields, that branch, beyond all question, is the one which deals with the relations of the eyes to each other and of those relations to the system at large.

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# **THE SURGICAL TREATMENT OF HIGH MYOPIA.\***

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It is manifestly impossible for an American ophthalmologist to have an extensive experience with high myopia even in any one of its phases; for this is an affliction from which our countrymen, as a class, have thus far escaped. Our German confrères have decided advantages over us for observation of the myopic disease. Certainly our environment and perhaps our school system must be better for the eyes than those of the Germans, or why the well known prevalence of myopia amongst the latter? Despite a considerable infusion of the Teutonic element in our not fully developed race, in several senses we are not a short sighted people.

Myopia of high degree is extremely rare in my personal experience. This is somewhat remarkable as a considerable proportion of my constituents are of German extraction. I have prescribed over 6,000 pairs of glasses during the last ten years in my private practice, of which only 16.8

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per cent. are concaves, including cylindric corrections. I append a table showing the refraction of 4,690 eyes. These statistics have been taken from cases occurring during the last ten years of my practice and only include those in which complete examination of the eyes under a cycloplegic was made.

Refraction.	No. of Cases.	Percentage.	Percentage.
Myopia .....	172 .....	3.7	} ..... 17.3
M. As.....	190 .....	4.0	
Comp. M. As.....	451 .....	9.6	
Hyperopia .....	1148 ..	24.4	} ..... 76.7
H. As.....	512 .....	10.9	
Comp. H. As.....	1942 .....	41.4	
Mixed As .....	275	6.0	} ..... 6.0
	4690	100.0	100.0

In addition to these there were 755 eyes fitted for presbyopia and 158 provided with prisms, mostly in combination with the refractive correction.

I am somewhat surprised myself to find that out of 4,690 eyes there is only 3.7 per cent of simple myopia and that including simple myopia, myopic astigmatism and compound myopic astigmatism, all together, there were only 813 eyes (17.3 per cent.) with myopia. Table is appended of the 27 eyes of high myopia over 10.0 D. which are only 0.60 per cent. of the whole number.

Refraction (concaves). Treatment.			Remarks.
I. { 10.0	Correction of refractive error.	}	Extreme choroidal atrophy, macular degeneration posterior staphyloma.
{ 14.0			
II. { 17.0			Posterior staphyloma, spots in vitreous beginning lenticular opacity.
{ 13.0			
III. { 16.0			Staphyloma, central chorio-retinitis, R. E. O. N. A.
{ 16.0			
IV. { 16.0			Conical cornea.
{ 16.0			
V. { 16.0			Advised operation; not accepted.
{ 16.0			
VI. { 12.0	"	}	
{ 12.0			
VII. { 11.0			
{ 11.0			
VIII. { 10.0			Hydrops. cornea irreg. astig. and anterior staphyloma from ophth. neon.
{ 10.0			
IX. { 13.0			Post-staphyloma.
{ 13.0			

X.	$\left\{ \begin{array}{l} 13.0 \supset 1.00, 180^\circ \\ 10.0 \supset 1.50, 180^\circ \end{array} \right. "$	$\left. \begin{array}{l} \\ \end{array} \right\}$ Choroiditis.
XI.	$\left\{ \begin{array}{l} 10.0 \supset 2.00, 180^\circ \\ 10.0 \supset 2.00, 180^\circ \end{array} \right. "$	$\left. \begin{array}{l} \\ \end{array} \right\}$ O. N. A.; V. F. Contracted.
XII.	$\left\{ \begin{array}{l} 14.0 \supset 3.00, 10^\circ \\ 20.0 \supset 3.00, 175^\circ \end{array} \right. "$	$\left. \begin{array}{l} \\ \end{array} \right\}$ R. E. slight staphyloma, L. E. large post-staphyloma, extending to macula.
XIII.	$\left\{ \begin{array}{l} 17.0 \supset 2.75, 180^\circ \text{ Operation.} \\ 16.0 \supset 1.50, 180^\circ \text{ Operation.} \end{array} \right.$	$\left. \begin{array}{l} \\ \end{array} \right\}$ Well developed conus R. and L.
XIV.	$\left\{ \begin{array}{l} 18.0 \\ 1.25 \supset .75, 75^\circ \text{ Correc. L. E.} \end{array} \right.$	R. E. amblyopia.

Of these 4,690 eyes there were only 27 of myopia over 10.0 D. (0.60 per cent.) Operation has been suggested in only two instances and accepted in but one. Of the others, perhaps one (XII) would have been a subject in which operation could have been conscientiously recommended had we known of, or dared to have done the procedure. The result in the one operative case has been satisfactory to both patient and physician. As its clinical course was complicated, it may be worthy of record.

**CASE I:** Miss J. L., aged 20, born in Norway, resident of Manitowoc, Wis., recommended by Dr. J. F. Pritchard; came to the office July 6, 1897. She had worn several pairs of glasses on account of short sightedness but had received no satisfaction on account of the eyestrain which occurred when she wore them.

**FAMILY HISTORY:** Father had good eyes, died of yellow fever in middle life; mother living and in good health, has always had weak eyes but never worn glasses, has had only the one child.

**PERSONAL HISTORY:** Patient had pneumonia at the age of 2 and again at 11, has never been strong and is now anemic, has always complained of weak eyes, has found it very difficult to study, has been very near sighted since adolescence, has been employed as house servant.

Examination showed a high degree of myopia with well developed conus in both eyes; no opacities of vitreous; ophthalmometric measurement showed corneal astigmatism R. 2.75.  $90^\circ$  L. 2.25,  $105^\circ$ ; the refraction was R. — 17.0  $\supset$  — 2.75,  $180^\circ$  L. — 16.0  $\supset$  — 1.50,  $180^\circ$  for which the following correction was given: R. — 16.00  $\supset$  — 2.50,  $180^\circ$ , V. = 6/XXXVI; L. — 14.00  $\supset$  — 1.25,  $180^\circ$ , V. = 6/XXXVI. reduction of 4.0. D. from spheres for close work was given. These glasses were better worn

than those which she had been wearing, but she was unable with them to follow up her ambition of becoming a dress-maker.

June 15, 1898, operation for removal of the lens was advised, accepted and patient sent to the hospital. Following day, discission of right lens capsule under holocain anesthesia and atropin mydriasis; but little reaction. July 2, 1898, a second discission was done which caused considerable reaction although the patient was allowed to go home. July 14th, she wrote she had great pain, anterior chamber shallow, lens decidedly swollen. July 26th, came to the hospital, lens greatly swollen, disintegrating and bulging into the anterior chamber; tension plus 2; lens matter was removed by linear incision under holocain anesthesia, a clear pupil immediately resulting. Further course was uneventful.

September 16th, the ophthalmometer showed corneal astigmatism in the eye operated upon of 2.50, 105°. With  $+ 1.00 \subset + 2.00$ , 115°, V. = 6/XXIV; with addition of  $+ 3.50$  sphere, Sn. 1.0 was read at 0.50.

September 17th, the effect of the operation having been satisfactory in the right eye, a discission was done on the left lens capsule which at first was followed by no reaction, but two weeks later the lens became so much swollen that tension increased and pain occurred, so that it was extracted October 1st, by linear incision, which was followed by clear pupil. Further course uneventful.

November 15th, a secondary operation was done on the capsule remaining in the right eye. At this time the ophthalmometer showed corneal astigmatism for the left eye 4.25, 75°. The refractive condition was R  $+ 1.00, \subset + 2.00$ , 115°. V. = 6/XXIV; L.  $+ 2.00 \subset + 3.00$ , 75° V. = — 6/XXIV. With these she has binocular vision and with the addition of  $+ 3.50$  spheres, for the near point, can read Sn. 1.0 at 0.50.

Patient has been seen or has written several times since and expressed herself as being very well satisfied with the improvement of vision and with the increased use of the eyes which she has obtained through the effect of the operation. Under date of Dec. 21, 1898, she wrote me "that she could see first rate in the distance but not so well near by." It may be that re-adjustment of the read-

ing glasses will satisfy her more completely. There has been no tendency toward any other complication than that from the excessive swelling of the lens and to this date the eyes are in very much better condition than before the operation.\*

Through the kindness of Dr. Chas. Zimmermann, of Milwaukee, I am enabled to describe the following case of high myopia which he has treated by discission and which I saw with him in consultation, April 9, 1898:<sup>51</sup>

CASE II: A well nourished male, age 25 years, applied to Dr. Zimmermann, Feb. 8, 1898, with binocular myopia; vision R. and L., fingers at 5 feet not distinctly; reads No. 1 Sn. at 2½ inches; vision with — 20.0 D. = fingers at ten feet; ophthalmoscopy and skiascopy show about — 20.0 D. There were floating opacities of vitreous in each eye, large staphyloma posticum and choroidal changes; visual fields apparently normal.

Feb. 9, 1898, discission of the right anterior capsule, crucial incision with knife needle in atropin mydriasis. Feb. 13th, lens opaque; some opaque lens matter in the anterior chamber; slight ciliary injection, no pain, tension not increased, daily massage of the eyeball in order to stir the opaque lens matter was made.

Since the absorption did not progress, March 1, 1898, second discission more extensive and deeper into the lens substance was made; the next day there was no pain or unpleasant reaction; more opaque lens matter in the anterior chamber. April 9, anterior chamber full of lens matter, some of which projects from the capsular wound; the whole lens, especially the center, has a more bluish appearance, a sign of advanced absorption. As there was no need of extraction, he was allowed to return to his home in Minnesota, with the advice to immediately come again if symptoms of irritation should set in.

In answer to inquiry, Jan. 23, 1899, a letter was received

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\*Since completion of above article, the patient has returned to the office complaining of "black spots" before the eyes, especially the left. Vision with correcting lenses was 6/XV, right and left. Ophthalmoscopic examination showed a disseminated choroiditis, most marked in the left eye—probably a result of the pathologic condition present before extraction of the lens. Visual fields contracted in both eyes. Patient given an alterative and advised to use the eyes as little as possible for near work.



stating that the lens matter has been entirely absorbed except a small circle around the pupil. June 28, 1898, an opening in the center had been formed which grew larger until about two months ago when no further change occurred. He can see very much better than before, can read ordinary print at 12 inches, whereas before he had to hold a book at two inches. He expects to return for the final discission of the posterior capsule and operation on the other eye.

These two cases are the only ones to my knowledge that have been operated in the Western States with the exception of some in Chicago,\* which will be mentioned in the discussion of this paper. In my own case it was necessary to do linear extraction upon both eyes. The advantages gained for distance have been much greater than those for near work. Both of these cases have apparently been satisfactory to the parties. In Zimmermann's case only two discissions without extraction accomplished absorption of the lens. The refraction being about — 20.0 D. it was well adapted for the procedure. The patient will ultimately be enabled to either do without glasses for near work or simply wear the correction of his astigmatism and but weak concave lenses for distance.

Up to the year 1890, total or partial opacity of the lens was the only recognized indication for its removal, with the exception of cases of dislocated lenses described by Harlan,<sup>15</sup> Alt,<sup>1</sup> etc. In 1858, Mooren<sup>31</sup> reported cases of removal of cataract in myopic patients. In 1894, Fukala<sup>9</sup> published a series of 114 cases of removal of the clear lens by discission or by this and subsequent extraction. In 1892, Valude,<sup>48</sup> followed by Vacher,<sup>47</sup> proposed extraction of the clear lens for high myopia but this procedure has not met with acceptance among the majority of these surgeons who have been bold enough to attempt such an operation in this class of cases.

The refractive conditions applicable for the operation range from a minimum of — 10.0 D. (Hirschberg,<sup>21</sup>

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\*The first case in America of the removal of the clear lens in myopia was probably that of Casey A. Wood and William F. Smith, of Chicago, in 1890, the latter of whom successfully removed by flap extraction a clear lens in a case of — 20.0 D. See Amer. Jour. Ophth., p. 360, Vol. VII. 1890.

to 14.0 D. of other writers. Schreiber<sup>42</sup> says — 16.0 D. The highest degree yet operated upon was in a patient of Schweigger's<sup>44</sup> who had — 33.0 D. The amount of lowering of the myopic refraction depends upon the amount of axial myopia present and is not the same for all eyes. If the lens be removed from an emmetropic eye, it becomes about from 10.0 D. to 11.0 D. hyperopic. However, there is another condition to be counted in the case of myopia and that is, increase in the length of the eyeball. By the removal of the lens in an eye approximately — 17.0 to — 18.0 D., emmetropia for the distance is produced. Even so recent and so thorough a work as that of Stricker<sup>46</sup> is in error on this point; the same will be found in Donders,<sup>4</sup> Helmholtz<sup>20</sup> and Landolt.<sup>24</sup>

Jackson<sup>22</sup> gives mathematical calculations regarding the results produced by the removal of the lens in the following which is according to measurements from the schematic eye of Helmholtz: "In the normal emmetropic eye the rays which strike the cornea parallel reach the second lens, the crystalline, converging to a point 31 mm. — 6 = 25 mm. behind it. They reach the crystalline, then 40. D. convergent. To this is added 20 D., the converging effect of the crystalline, making 60 D. The rays are, therefore, focussed  $1000 \div 60 = 16.667$  mm. behind the crystalline.  $16.667 + 6 = 22.667$ , the antero-posterior axis of the emmetropic eye. If we remove the crystalline lens and replace its effect by adding to the refractive power of the cornea, the refractive power required to be so added is the strength of a convex lens correcting the hyperopia caused by rendering a previously emmetropic eye aphakic. After removal of the crystalline, the cornea would require to have a strength of  $1000 \div 22.667$ , equal 44.12 D.  $44.12 \text{ D.} - 32.26$ , the refraction of the normal cornea, equals 11.86 D., the hyperopia *measured at the cornea* produced by extraction of the crystalline from the emmetropic eye. To correct this hyperopia the lens placed at the ordinary distance of the lens in front of the eye would be a convex 10.5 D."

"In contrast to the above, let us use the dioptric eye to ascertain the amount of previous myopia necessary for the removal of the crystalline lens to render the eye emmetropic. To give emmetropia after removal the retina must

lie 31 mm. behind the cornea. To be focussed upon the retina, rays must leave the crystalline converging toward the point 25 mm. behind the crystalline; that is 40 D. convergent. If they must render 40 D. convergent by the crystalline and its refractive power is 20 D. they must have been  $40 - 20 = 20$  D. convergent when they fell upon the crystalline. They must have been converging toward a point  $1000 \div 20 = 50$  mm. behind the crystalline, which will be  $50 + 6 = 56$  mm. behind the cornea. Such rays must have left the cornea convergent  $1000 \div 56 = 17.86$  D. convergent. If they are rendered thus convergent by the cornea having a refractive power of 32.26 D., they must have been divergent on reaching the cornea, to the extent of  $32.26 - 17.86 = 14.40$  D. *as measured at the cornea*. Such a myopia would be corrected by concave lenses of 17. or 18. D. placed the ordinary distance in front of the cornea. This, then, is the amount of myopia as ordinarily measured and expressed, that can be corrected by removal of the crystalline."

Hirschberg <sup>31</sup> gives a rough rule for the estimation of the ocular refraction before and after removal of the lens which is approximately correct: "To obtain the correction for distance of the myopic eye after operation, deduct one-half the amount of the correction of the myopia before the operation from + 10.0 D. Salzmann <sup>35</sup> states that the most desirable effect in removal of the lens for high myopia would be not to leave the eye emmetropic, but slightly myopic (2.0 to 3.0 D.). If the myopia be greater than 18.0 D., concave glasses for distance are necessary, and the patient may perhaps be enabled to get along without glasses for near work. This is exemplified by Zimmermann's<sup>51</sup> case.

Mooren,<sup>30</sup> basing his statements upon observations covering 150,000 cases, claims that the wearing of full correcting lenses in myopia for near work is pernicious and is to be condemned, because they require exercise of the accommodation, induce ciliary spasm, intensify the refractive error and cause progressive myopia, and states that there is danger in such an event, of detachment of the retina and slow inflammatory changes. In contrast to this is the statement of Edward Jackson,<sup>22</sup> that high myopia has probably been more generally relieved by lenses here

than abroad. The statement that patients can never wear lenses of  $-13.0$  to  $-15.0$  D. with satisfaction, is disproved by our practical experience. Correction of over  $-18.0$  to  $-20.0$  D. by lenses is impracticable in many instances on account of the smallness of the retinal images and the spheric and prismatic aberration therefrom resulting<sup>1 2</sup>.

Some authors, (Von Hippel <sup>16</sup>, Vacher <sup>47</sup>, Valude <sup>48</sup>, Pflueger <sup>34</sup>, Everson <sup>9</sup>, claim that after the removal of the lens in high myopia there is an actual shortening of the globe, and that the operation is a preventative measure against progressive myopia, for it hinders further lengthening of the eyeball. American and English authors, (Sattler <sup>36</sup>, Lawford <sup>29</sup>, Cross <sup>2</sup>, are more conservative and state that the operation is contraindicated in all excessive degrees of congenital or acquired myopia in which a tendency to inexorable progression must be admitted, together with unmistakable evidences of structural disease of the uveal tunic, vitreous humor and retina. Von Hippel in 114 cases<sup>16</sup>, has operated mainly by discission, with extraction of the lens mass in some cases, and confines operative interference in children and young adults in whom the myopia shows a progressive tendency and in myopic adults who cannot follow their occupation by the use of glasses; in no case operating unless the myopia has advanced at least to 12.0 D. It is advisable to operate upon both eyes.

Magen <sup>28</sup>, and Sattler <sup>38</sup>, of Leipzig, report satisfactory results in patients up to 64 years of age. Fukala<sup>13</sup>, Pflueger <sup>34</sup>, Vacher <sup>27</sup> and Schweigger<sup>44</sup> have operated most successfully on young adults and on a few between 35 and 50 years of age but recommend the operation only in young patients where the choroidal changes are stationary. Fukala <sup>12</sup> does not consider an eye suitable for operation unless vision is equal to 1/X with the correcting lenses, and the patient should be able to read Jaeger No. 1. Other German authors, particularly Magen <sup>26</sup> and Fröhlich <sup>8</sup> are more radical, recommending discission for complicated cases of high myopia in all ages.

We have the choice of two methods of operation, both of which lead to the same end, the removal of the lens and

reduction of the refraction. The operation should be invariably preceded by a carefully guarded traumatism which brings about cataract, softens the cortical substance and loosens the nucleus from the capsule <sup>46</sup>. In young persons the operation of anterior discission fulfills this indication. One or two subsequent discissions may cause absorption of the lens substance after several months; but in the majority of cases, after the first or second discission, it will be found necessary to evacuate the contents of the capsule by linear extraction. Magen <sup>26</sup> shows that the nucleus of the lens in high grades of myopia, even in old persons, is never hard and may be satisfactorily dealt with by discission. Sattler's <sup>37</sup> (Leipzig) modification, which he has done on 30 patients up to date, by which he claims more rapid healing, least inflammation and less operative astigmatism, is done with the Weber hollow lancet; the nucleus and lens substance being curetted with the Daviel spoon.

Vacher <sup>47</sup>, and Valude <sup>48</sup> are the chief exponents for extraction of the transparent lens, but Fukala <sup>13</sup> and others state that it has been abundantly shown that extraction of the transparent lens is not the correct method. Fukala <sup>13</sup> recommends iridectomy and discission, but mutilation of the iris is discountenanced by other operators.

The main theoretic disadvantage of the operation is the loss of accommodation resulting from removal of the lens, but does not this eliminate one of the main causes of ciliary spasm? Another disadvantage is the fact that, while we increase the visual acuity for the distance without glasses, it is usually more or less injured for the near point. It should be likewise remembered that increase of visual acuity may not be attended by increase of perceptive power. Some authors <sup>28</sup> say that the operation is without danger, but there is always danger in operation upon the eye, especially incising operations.

Otto <sup>42</sup> had increase of tension in 23 out of 85 cases and thinks that the worst complication from the operation is detachment of the retina. Sattler <sup>38</sup> has loss of vitreous in 25 per cent. of his cases.

Schreiber <sup>42</sup> is one of the most conservative German writers upon the subject. He thinks that too many myopes

have been operated upon. The operation is attended with danger from infection and retinal detachment. Most eyes have to be operated upon at least three times to produce a good result, and these operations are more liable to infection than those of senile cataract. He states that—16.0 D. is the lowest grade that should be operated upon and even this is not advisable if the patient is able to work satisfactorily with or without this correction. Out of 5,094 cases of myopia only 80 were —16.0 D. (1.2 per cent.) Of these only 36 could be recommended for operation; an average of 3 a year in 14 years. (Note author's statistics.)

Fröhlich<sup>7</sup> shows that the total loss (in reports of 572 operations for myopia), by infection was a little over 2.2 per cent.; and the other danger which has been held up as especially apt to occur, that of detachment of the retina, happened in 2.2 per cent., making the total loss by infection and retinal detachment, about 5.5 per cent. However, a considerable proportion of cases of myopia without operation, nearly 5 per cent. sooner or later acquire detachment of the retina. In my case there was increase of tension, which might have proceeded to glaucoma had it not been relieved by removal of the lens matter by linear incision.

The results of operative treatment fully substantiate the claims made for the operation. It should be remembered that the object of the procedure is principally to accomplish the reduction of the power of the dioptric apparatus, whether the myopia be axial or dioptric or both. However, we obtain concomitant advantages: (1) Increase in the visual acuity, which is two to three-fold in selected cases, after correction of the residual ametropia (without correction many-fold). The ideal myopia for correction by removal of the crystalline lens is—17.0 or —18.0 D. and in such cases a perfect operative result should give 55 per cent. improvement of vision and escape all need of wearing strong lenses<sup>22</sup>. The bettering of visual acuity is not synonymous with bettering visual appreciation. Leber<sup>27</sup> thinks that part of the improvement in visual acuity is due to favorable influence upon the health of the retina and not to improvement of the optical condition.

(2) The retinal images are larger after operation than before in the myopic eye that has become nearly emmetropic. The reason for this is shown by Jackson:—<sup>22</sup>.

"A sufficiently accurate approximation for practical purposes may be reached by considering the effect of the increased length of the eyeball antero-posteriorly as compared with the reduced eye of Donders. In the emmetropic reduced eye the nodal point is 15 mm. in front of the retina. In the eye so myopic as to be rendered emmetropic by removal of the crystalline lens, the nodal point is the same distance behind the cornea, and the increased length of the eyeball is to be added to 15 mm. to find the distance in front of the retina. The latter eye being 31 mm. long, as against 22-21 mm., the length of the normal emmetropic eye, the difference of  $8\frac{1}{3}$  mm., is to be added to 15, making the distance from the retina to the nodal point  $23\frac{1}{3}$  mm. Since, for a given object at a fixed distance, the size of the retinal image, is directly proportioned to the distance of the retina from the nodal point, the linear dimensions of the retinal image of such a myopic eye, will be to those of the emmetropic eye as  $23\frac{1}{3}$  is to 15. The retinal image of the myopic eye will be 55 per cent. larger than that of the emmetropic eye. The correction of myopia by concave lenses placed at the anterior focus of the eye, the position usually assumed for the correcting lens, reduces the retinal image of the myopic eye to the size of the retinal image of the emmetropic eye. But the correction of the myopia by removal of the crystalline, carrying the nodal point only from 7.321 to 7.829 behind the cornea, leaves the size of the retinal image practically unchanged. Hence, the gain in size of the retinal image by this latter means of correcting myopia is 55 per cent.; and this is about the improvement in visual acuteness that we can expect from a perfectly satisfactory removal of the crystalline lens, if the myopia is axial. If the myopia is myopia of curvature the gain will be less."

(3) The visual field is decidedly enlarged; this is even without correction of the residual ametropia, and is especially enlarged in comparison with the effect of the stronger concave lenses which were worn before the operation. The increase in the angle of vision is brought about by the reduction of the dioptric apparatus from a compound to a simple system.

(4) With correction there is increased range of vision for near work; although, of course, accurate vision



can only be had at one fixed point; for there can be no accommodation after removal of the lens, although attempts at same are made by the ciliary muscle<sup>46</sup>.

(5) As is well known, strong spheric and cylindric lenses cannot neutralize ametropia of high degree, for the dioptric apparatus is not perfectly spheric; the cornea is an ellipsoid of three axes, even the visual zone of the cornea and lens is eccentrically and irregularly astigmatic. In the highly myopic eye, the effect of these conditions is exaggerated and lenses cannot fully correct the error nor give normal visual acuity. The reduction of myopia by operation permits the use of weaker lenses and reduces the exaggerated effect of these abnormalities and thus increases the visual acuity.

(6) By the pupil being usually brought nearer to the retina after removal of the lens, the eccentric visual rays are more excluded as the diaphragm is nearer the nodal point.

(7) The clinical value of the operation lies mainly in the more extended use of the eyes obtained by the patients; they are most highly delighted with the effects, claiming that a new world has been opened to their view. The doing away with the annoyance of heavy concave glasses and the resultant small images, and the eye strain produced by their prismatic effect, is largely responsible for this amelioration. After the completed operation, the patient has to wear two sets of lenses, but in high degrees this had to be done before. In myopia of about 18.0 D., after operation some patients are able to get along without any glasses for distance, as does the emmetrope. In the case of myopia 21.0 to 22.0 D. he may even dispense with glasses, just as myopes of about 3.0 D. get along very well without their correction.

#### Résumé.

(1). Surgical treatment of myopia should be limited to those cases over —12.0 D. who suffer great inconvenience from their correcting lenses. The ideal cases for operation are those of —17.0 to —18.0 D.

(2). The operation is mainly indicated in young adults.

(3). Cases having active disease and changes in the



ocular structures, such as progressive myopia, choroiditis, fluidity of the vitreous or detachment of the retina are not applicable.

(4). The dangers of operative interference are more than counterbalanced by the results to be achieved, which are mainly, increase of visual acuity and of the visual field, and more extended use of the eyes which accompany diminishment of the refraction.

As stated in my preface, the opportunities for observation of high degrees of myopia, particularly of operation for same, by the American surgeon are limited in proportion to those of ophthalmologists in the old world. Even there only about 1,000 cases are reported. By individual reports, however we can add our evidence to the already proven value of surgical treatment for this class of cases.

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# **SOME OF THE FAILURES IMMEDIATE AND REMOTE MET WITH AFTER CATARACT EXTRACTION.**

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Those of us who can not obtain the advantages of a special hospital are called upon to perform operations for cataract in the surgical wards of a general hospital, in medical college clinics, and in all kinds of private dwellings; often in country towns, where after the operation we occasionally never see the patient again, or only for the first few dressings. Under such conditions, it is impossible to follow out the cases, note the course of healing, and the visual result.

Attention to detail largely governs the measure of success which attends all surgical operations, and this is conspicuously true of cataract extractions. With a thorough cleansing of surrounding parts, as well as the field of operation, sterile instruments and sufficient manual dexterity, uncomplicated cataract gives us little concern as to the outcome. When failures do occur, a careful study of the causes leading thereto may prevent a repetition at some future time of the same error.

My personal experience comprises 141 cases, many of them done under the most adverse circumstances, and yet the complete failures in uncomplicated cases have been few.

My early hospital training led me to adopt the combined method of extraction, yet I saw the simple operation lead to brilliant results in the clinics of De Wecker, Galezowski and Panas. Of the 141 cases, 36 were simple extractions. In 77 cases one eye only was operated upon; in 32 both eyes, always at different sittings, 44 cases were among the colored race, 97 were whites. All of them were done under local anaesthesia from cocaine.

In operating by iridectomy, the incision was made as near the sclero-corneal line as possible, including about one third of its circumference, with a small conjunctival flap when it could be well obtained, usually central crossed laceration of the capsule, and great care in the cleansing of the incision from all particles of shreds and debris. In the simple operation the incision was aimed to be slightly larger and farther forward in the cornea, especially at its summit.

The conditions have been such that accurate after visual results have not been obtained in at least one fourth of the cases, in many others only when discharged from their rooms. The failures however have been vividly impressed upon me and therefore were watched in detail.

These consist in three failures from primary corneal suppuration or wound infection; one from hemorrhage from the iris; two from suppurative irido-choroiditis starting in the scar of an iris prolapse some time after an apparent success; two directly from the results of secondary operations.

The first case lost was from primary corneal suppuration, early in the series. Mrs. Taft, age 58, was operated upon in May, 1887, by the modified Graefe method, with but little traumatism, and no complications during the operation. The hygienic conditions were not good, but care was taken to thoroughly cleanse the surroundings and flood the eye with boric acid solution. The ordinary flannel bandage over a gauze and cotton pad, were the dressings. The next day she complained of some discomfort, but the dressings were not removed until the second morning. On inspection the corneal lip of the wound was seen to be hazy, and no effort in the formation of the anterior chamber was apparent. Hot compresses were applied, and ten grains of calomel were given. The same afternoon showed extension of the corneal haze and beginning necrosis. In two days more the iris was involved and panophthalmitis supervened.

Why this eye should have been lost and others in which far greater defects in my operative technique occurred, seemed beyond explanation, since a successful result was obtained in the fellow eye six months later, the only added precaution being a preliminary iridectomy.

The second case lost primarily occurred in Mrs. Chapman, age 62, and was badly complicated. The right eye was atrophied from trachomatous corneal ulceration, the left cornea was slightly hazy and vascular. Extensive entropion and trichiasis existed in both eyes. In May, 1891, I did a plastic operation on the upper lid of each, following the method of Green. After this, prolonged treatment with copper brought about subsidence of irritation and an extraction by iridectomy upward was carried out. Notwithstanding all precautions in the way of asepsis were followed, the wound refused to heal, the cornea became hazy, and panophthalmitis destroyed the results of my long and tedious attempt to give this unfortunate woman one useful eye.

Case 3, Mr. O., was seen in 1891, with senile cataract, mature in the right eye, but useful sight in the left. He was suffering from chronic lachrymal abscess in both eyes, the canaliculi had been slit years before, and, on pressure, pus in quantities was extruded. For four months I treated the lachrymal disease by probing with Theobald's probes up to No. 12, and washing with boric acid and astringents. The pus was apparently overcome, and at times only mucoid material could be forced out. As a preliminary to the operation, washing out the lachrymal canal with bichloride solution, 1-3000, was made. Twenty-four hours afterward the dressings were removed and all looked well, on the second dressing pus was found regurgitating from the sac, but beyond considerable irritation, no infection was apparent, on the third day however the wound began to show some infiltration. All dressings were now removed and the eye irrigated every two hours with bichloride solution, but the infection gradually progressed, the iris became involved and suppurative irido-choroiditis closed the scene.

All operators are aware of the danger of infection in lachrymal abscess cases, and while in the hands of some it has not been a serious complication, to my mind it is a grave one. Von Rothmund in 1420 extractions encountered it 8 times, none of these were lost, yet beyond opening the canaliculi and probing with Weber's probes, no special precautions were taken. In 8 consecutive cases Collins reports good results from daily syringing the canal with

boric acid solution. Streatfield says that the danger is almost as great when there *has been* lachrymal obstruction as when the pus is obviously present, because a discharge will reappear after the operation and pus be found in the sac before the wound in the cornea has healed. Therefore he advises that the sac be opened and destroyed by the galvano-cautery as a preliminary to all operations involving the cornea. Less radical measures have proven successful in the hands of others.

Berry and Schweigger have had successful results from opening up the sac and packing it with iodoform at each dressing filling the inner canthus with the powder. Kirschbaum advises that a strip of iodoform gauze be inserted into the sac, and filling the inner canthus so as to draw all deleterious secretions in the sac away from the conjunctiva. I succeeded in one case by washing out the canal with formol solution 1-2000, and leaving off all dressings on the second day, thus lessening the danger of pus accumulations in the sac.

Within the last few years a number of observers have reported loss of eyes from hemorrhage immediately after the extraction. The source of the blood varies in different cases. For instance, Hotz, Spalding, Wadsworth and others, report cases where the blood probably came from the choroid; on the other hand, Fryer and Baldwin's cases were apparently from the cut iris. Oliver has reported a case where after excessive hemorrhage from the iris occurring two weeks after the operation and recurring, good vision eventually resulted.

My experience included one case. Miss S., probably 65, was brought to me in 1893, blind in the right eye from mature uncomplicated cataract, the left eye with beginning lens changes. She was spare built with a flabby skin, and a peculiar sallow complexion, and a history of rheumatic attacks; no organic kidney disease. On physical examination of the eye I could find no cause for refusing an operation, which was done the same afternoon, as her family physician was anxious to return home, and the patient was too timid to have the operation done without his presence. The parts surrounding were well cleansed with bichloride solution and the conjunctiva irrigated with the same a few hours before the time set for the operation.

The incision was nearly in the sclero-corneal margin with a small conjunctival flap, an iridectomy and laceration of the capsule were quickly followed by the exit of the lens, considerable blood filled the anterior chamber obstructing a view of any cortical remains. Much difficulty was encountered in cleansing the cut of blood clots, and irrigation along the incision became necessary. The eye was now bandaged.

The patient had been operated upon in bed, and no exertion on her part was therefore necessary. The next day the dressings were removed, these were slightly discolored with blood corresponding with the canthal slit. On examination of the eye the anterior chamber was found still filled with blood, and the incision occupied by a blood clot. An effort to remove this failed, because of the resistance of the patient. The eye was washed out with bichloride 1-3000, and again bandaged as firmly as comfortable. The blood absorbed slowly, and the lips of the wound pouted and contracted tardily, but no infection occurred. At the end of ten days there was still some blood in the anterior chamber, and a band of organized lymph occupied the wound, the pupil was not influenced by atropia, and a mass of blood, lymph and capsule filled the coloboma. The wound now began to contract, at four weeks she went home, the eye still irritable. Three and a half months later she returned. The eye was free from redness, and partial flattening at the seat of the incision had taken place, a brownish membrane filled the pupillary area; perception of light was present. I refused to make a secondary operation because of the danger of farther phthisis. The left eye was subjected to operation without iridectomy, no complication occurred and vision of 6/15 was obtained.

Within the last decade the advocacy of simple extraction by leading operators connected with large ophthalmic hospitals has brought it into general use even by the beginner in eye surgery, who possesses none of the advantages in their after care of his more fortunate teacher. From an esthetic standpoint there is no question of its superiority over the operation with iridectomy. But the danger of prolapse outweighs its other good points. Looked at from any standpoint, prolapse of the iris is a serious menace to the eye. If small and left to contract, the recovery is slow,



and useful visual acuteness interfered with by the very great amount of astigmatism, which is slow in lessening. It is not always possible to prevent the iris from cicatrizing in the wound in any form of operation; the leakage of aqueous may carry a portion of the coloboma into the incision at any time before the complete closure of the corneal wound; but in simple extraction when prolapse occurs, the lymph binds the iris at the angles and prevents it from being disengaged even after the protruding portion is excised. Microscopic examinations by Becker of 38 cases of cataract extraction, eyes removed after death, showed in only one-third of the cases absence of the iris tissue in the scar.

Nothing can be more deplorable to the ophthalmic surgeon than to see an eye after it has obtained sight, lost by a violent, purulent infection starting in an incarcerated iris. Schoeler says that cases of prolapse should be watched, since infection through incarceration and loss of the eye may occur after years.

Knapp states that the iris prolapse in cataract operations very rarely occasions the loss of the eye. In a synopsis of 1000 extractions with iridectomy, he speaks of two cases lost long after the operation through suppuration starting in a bit of incarcerated iris in the angle of the scar. Since the simple operation has become more popular, such accidents must necessarily become more frequent. My experience with this complication has been exceedingly disastrous. In 36 simple extractions, 2 cases were destroyed long afterward by infection starting in a mass of engaged iris.

Case 1, Geo. S. Moore, age 59, was operated upon by simple extraction in December, 1891. The patient was timid, and just as the lens was passing through the incision a sudden grip of the lids forced it out, and with it a small quantity of vitreous. The iris corresponding with the incision, seemed to sink back against the ciliary body and disappear. I cleansed the wound as best I could without further loss of vitreous, and bandaged the eye. The next day when I dressed the eye the iris had come forward and was caught in the inner corner of the incision, but for fear of more vitreous being lost, I did not excise it. The eye recovered slowly and the prolapse flattened, but consider-



able astigmatism existed for some time. In June, 1892, six months after, I ordered permanent glasses. Javal showed six diopters of astigmatism against the rule, but with +12. D. spherical combined with +3. D. cylinder, axis  $15^\circ$ , vision equaled  $6/9$ , and a +4. D. added to this gave Jaeger No. 1. In November, 1893, I operated on his right eye making an iridectomy. Eleven weeks afterward my record reads, R.E. with +12. D. spherical vision equals  $6/5$ ; L.E. with +12. D. spherical combined with +2.25 D. cylinder axis  $15^\circ$  equals  $6/6$ .

In July of 1896, during a protracted season of high temperature I was called to see him. He had been in great pain for twenty-four hours with the left eye. I found a purulent iritis well advanced, which seemed to have as its focus the old point of incarceration. The vitreous rapidly became infected, and panophthalmitis supervened. Before this latter condition was well established, enucleation was advised, but examination of the urine showed such large quantities of albumen and casts that it was thought best not to incur the dangers of an anaesthetic, so the eye was allowed to atrophy. The patient is still enjoying useful sight with one eye. No farther examinations of his urine have been made, but I see him on the streets apparently in good health.

Case No. 2, of a similar nature, was that of A. T. Brentlinger, age 45. December, 1893, I operated on his left eye at the clinic of the University of Louisville, with iridectomy and a peripheral corneal incision. The patient was a model one in every way, and in one week the eye was practically well. Four months later he came to my office and requested that I operate on the other, as it was now useless to him, and his occupation as a carpenter has been seriously interfered with, having to depend on one eye and that with no accommodation. He further complained of the excessive glare in the eye operated upon. I agreed to operate by simple extraction if he could be placed in an infirmary. Accordingly I operated a few days later. No accident of any kind occurred during the operation, the iris came out with the lens and was easily replaced, a central, round pupil being obtained. At my first dressing I found a small prolapse into the wound, but it did not protrude and was not excised. This gradually enlarged until

quite a good-sized bead presented. The eye was slow in healing, the protruding iris gradually contracted and vision 6/18 was obtained.

In October, 1894, I did a secondary operation on the capsule in each eye. No reaction followed. The vision was improved, but my record of that date has been lost.

In August, 1897, I was asked by Dr. Lederman, the chief of the eye clinic of the University of Louisville, to see this man at his home. The history was that he had been seeing well with both eyes until three days before, when working in the hot sun he perspired freely, and the perspiration got into the eye and it became very irritable. The night following it pained him very much. The next morning he could not see with it. He applied at the clinic and was given solution atropia and an eye wash. The following day Dr. Lederman saw him and recognized a purulent iritis starting in the iris adherent to the old corneal wound. When I saw him all the uveal tract seemed the seat of purulent infiltration, and enucleation was advised to shorten his pain. Examination of the urine showed an extensive amount of albumen present and the operation was deferred. For several days he was in much pain and a condition of stupor and mild insanity supervened. He eventually recovered and returned to his work. A recent examination showed the right eye phthisical. The left is free of all irritation, clear central slit in capsule and well formed coloboma; vision 6/12 + with + 11.D. spherical combined with + 1.75 D. cylinder axis 170°, Urine examination shows absence of any evidence of kidney disease.

Arlt and Leber attribute such results as these to septic inoculation in a cystic scar.

Wagenmann was the first to thoroughly examine these cases. He reports 13 cases in which suppurative hyalitis occurred at periods varying from a few months to some years after the healing of an operative wound or a prolapsed iris. Extractions of cataract and iridectomies for glaucoma were the most frequent causes. He propounds three hypotheses: 1st. The micro-organisms may have entered the wound before it has healed and remained inert. 2d. The organisms may have invaded the cicatrix from the circulation and found in these tissues the point of least re-

sistance. 3d. The cicatrix may have become newly infected. The latter theory he considered most probable.

It has been stated that since cystoid cicatrices occur when the line of incision invades the sclera and never when in the cornea, that if the incision is placed properly, no such sequela can occur. In opposition to this may be mentioned the case reported by Berry, wherein the eye was lost nine months after a successful cataract operation in which the wound was corneal and no prolapse, but the iris was apparently adhered to the inner lip of the wound. All of us have seen similar destructions of the eye starting in old prolapses from corneal ulceration.

Berry further reports a case from the clinic of Argyle Robertson, and states that both cases were exposed to great heat before the outbreak of the septic infection.

The two cases that I have just reported occurred in extreme summer weather, and one case explained his trouble by the fact that he worked in the very hot sun and the eye became inflamed from perspiration. It appears that the irritation from the extreme heat produced a conjunctival irritation of such a character as to act as a fertile soil for organisms, which through some slight traumatism invaded the scar and spreading from thence to the iris and vitreous produced general septic infection of the contents of the globe.

Scarcely of less gravity than extraction of the opaque lens itself, is the operation for the secondary capsular membrane. Recognizing this fact, removal of the lens in its capsule has its advocates, preferring to risk the loss of vitreous and its possible after results, rather than to incur the dangers incident to secondary operations. Removal of the anterior capsule by the forceps method of De. Wecker is certainly an advance, provided it can be accomplished in all cases.

Peripheral capsulotomy as advocated by Knapp, must necessarily be followed by the largest percentage of secondary operations. For instance, in his second hundred of simple extractions 74 per cent. required after interference. Landolt from a review of the experience of many operators, comes to the conclusion that secondary capsule operations are more dangerous than the extraction itself.

The amount of visual acuteness contra-indicating a

secondary operation, is a question of importance. Whenever the visual acuteness is 6/24 or better, I have refrained from interference. My experience with secondary operations is confined to 53 cases. Of these two were lost completely, and in a third the vision was far worse as a result of the interference.

The first was that of Ruth R., colored, 71 years old, extraction in March, 1896, at the University clinic. As the corneal incision was finished, she violently squeezed the eye and the lens together with the iris and a quantity of vitreous was forced out, the lens rising in the air and falling on the cheek. I quickly removed the speculum and succeeding in excising the protruding iris with a large bead of vitreous and partially approximating the wound. Notwithstanding this accident, the eye promptly healed. The violent muscular effort had ruptured the capsule in a horizontal direction just above its center. The lower portion contained a mass of opaque lens material remaining in the capsule. Three months later a test of vision showed 6/60. I attempted with Knapp's knife needle to make a crossed incision in the opaque area; the horizontal incision was without incident, but when I attempted the vertical slit, the membrane appeared to yield slowly, and as I withdrew the knife a retinal detachment floated into the pupillary space. The ultimate visual result was perception of light only. Recently I operated on the fellow eye without incident.

The second lost was even more unfortunate. Mr. E. B. Russell, age 79, extraction with iridectomy, March, 1896, right eye. Twelve days later vision was with + 10.D, spherical 6/20. He returned to his home and I saw nothing more of him until December, when he came complaining of failure of vision in the operated eye. With his glass it was 3/60. Oblique illumination showed thickened membrane in pupillary space. He was sent to the infirmary, the eye prepared for operation by thorough cleansing of the surroundings and irrigation of the conjunctival sac with boric acid. A T-shaped opening with Knapp's knife needle under artificial illumination was made. The eye was irritable for three days, but the pupil responded to a mydriatic, a cloudiness began in the vitreous, and in twenty-four hours a suppurative hyalitis destroyed the

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April, 1898, I operated on his other eye with useful result resulting.

In one other case, where after a simple extraction and on 6/60, a secondary operation was followed by acute iridocyclitis, which was relieved by eserine and paracentesis, the vision was never as acute as before the secondary operation. The only explanation for Knapp's great success in secondary operations must be due to the fact that he usually makes this operation not later than six or eight weeks after the primary extraction.

I have dealt entirely with the dark side of cataract operations, hoping more could be learned from a study of failures than from a tabulation of the results in cases following the normal healing process. My observations do not coincide with those of men of greater experience, especially on the influence of prolapse of the iris upon the general well-being of the eye, judging by the following extract from a recent writer of large and varied opportunities:

Corneal fistulae are rare, and have never yet been known to produce purulent intraocular inflammation. It is not that eyes which have maintained a prolapse of iris after extraction, have ultimately gone to ruin from intraocular inflammation, but that does not prove that the prolapse was the cause, for if so, such results would be much oftener met with." (Schweigger.)

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## THE ETIOLOGY AND IMPORTANCE OF IRITIS.\*

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One of the noteworthy features of ophthalmic literature of the past few years and one that must appeal to anyone whose attention is directed to it, is the comparative neglect of one of the most frequent, and certainly one of the most important of ocular disorders—iritis. When we take note of the vast amount of recent literature on the more strictly surgical diseases of the eye, the disparity becomes the more apparent, and while not underrating the worth of investigations of the latter class of affections, one is inclined to ask, have not the diseases of the iris, an organ more complex anatomically, and functionally, not less important, a still greater relative importance? It is not because our knowledge of diseases of the iris is complete, for such is far from being the case; it includes, I believe, a rather larger proportion of dubious or unsettled questions than does that of some of the more frequently discussed disorders. There is certainly room and need of study in this particular line, and therefore it is to some aspects of the etiology and pathology of iritis that I wish to call your attention. When we examine the structures of the eye from without inward, passing from the external eye backward, we find the iris the first actively functioning organ, and the most complex in its structure. Its relative importance, judging from these facts, ought to be apparent, and it is not inferior to that of any other structure as regards its normal and its pathological activities. The slightest disorder, a mere hyperemia, of this excessively-vascular organ is immediately reflected, so to speak, on the external ocular membrane, so that mistakes of

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diagnosis are frequent, and sometimes disastrous. Then, too, its internal relations with the deeper tunics of the eye renders it still more important. The iris, besides its motor function, which it shares with the ciliary body, is, like the latter, an anterior extension of the vascular tunic of the globe of the eye which is completed by the choroid from behind, and this continuity of tissue naturally suggests a common pathology, at least in active inflammatory conditions, and therefore acute iritis almost necessarily involves more or less implication of the deeper tissues of the uveal tract, it can hardly be unaccompanied with some degree of cyclitis and choroiditis. I say hardly, because this is yet to some extent a disputed question, and I am constantly more impressed with the uncertainty of our knowledge on this point and of the impropriety of saying positively in any given case that it is solely an iritis or a cyclitis, for both organs are supplied by the same blood vessels and lymphatics, and bathed alike in the same aqueous solution. It is true, we can conceive of an acute primary cyclitis and a secondary iritis, the circulatory media coming first in contact with the ciliary body, but how are we to conceive of the ciliary body becoming impregnated with inflammatory products, without involving also the iris? An independently existing cyclitis is therefore improbable, and a primary iritis without a coexisting cyclitis may be possible, but is hardly probable. The involvement of the choroid follows the same rule, as its connection with the ciliary body is even more direct than that of the latter with the anterior section of the uveal tract, the iris.

The systemic or general disturbances which accompany or follow the derangement of this most important and functionally widely related organ are also an index of its importance. There is no other ocular disorder that is more painful, or that more quickly reacts upon the organism in general in producing general febrile disturbance, for how frequently are we surprised when the thermometer is used to note the marked elevation of temperature with an apparent slight iritis. In this respect it is almost unique amongst the local diseases of the eye. The iris is, moreover, one of the organs that is directly attacked in systemic morbid states, not mere infectious diseases where the germs or their products seek out points of predilection



or of least resistance to do their evil work, though it is especially vulnerable to some of these, but it appears to peculiarly share in some disorders induced by auto-intoxication from deranged general metabolism as, for instance, in rheumatism or gout, or through some as yet imperfectly understood disturbance of the central nervous system, as in diabetes. Exactly how the toxins engendered in these conditions reach the iris to make it the point of selection for their attack is not clear, but the fact is they do reach it, and its involvement is a marked feature of these and many other affections. In 144 cases of diabetes, Galezowski (Jhrb. f. Augenh., 1883, p. 297, quoted by Kines) found iritis in 7 cases, or nearly 5 per cent. of the total. The iritis of rheumatism is so well known and so marked a complication that its consideration will be taken up more *in extenso* later in this paper.

But to me, one of the most interesting and suggestive subjects connected with the pathology of this organ, however, is that of sympathetic ophthalmia. We are all well aware that when one eye is injured, and the lesion extends to or involves the so-called danger zone or ciliary region, there is apt to follow an involvement of the other eye, beginning with the well-known ciliary disturbance and coincident iritic involvement, and in many cases true plastic irido-choroiditis in the fellow eye, and rapidly extending to other parts, causing complete functional destruction of the second eye. Assuming, as some do, that this is due to an infection traveling, let us say, by the route of the optic nerve, ciliary reflex or circulation, the fact that it first acts on the iris or ciliary body is a curious one. Why should it at first pass by the corresponding ciliary body to the iris to involve the ciliary body secondarily, or vice versa? Is it because the iris is, through some sympathetic disorder of innervation, not yet ascertained or theoretically explained, rendered especially vulnerable to germs of diseases in such cases? It is not necessary to assume the presence of microbic germs to explain a non-suppurative inflammation, but the carriage of their toxins even in this case is difficult to reason out, especially if we have also the puzzling problem of their elective affinities to solve. If we confine the consideration to the possibility of merely toxin infections, we have



difficulties enough; but they are more easily met from a theoretic point of view than are those of the actual transmission of the germs from the originally infected eye, which has been seriously argued to account for sympathetic ophthalmia with its iritic involvement. We know that microbes travel through the blood vessels and the lymphatics, and that many even of the pathogenic forms are our constant parasites, but are harmless for evil unless they can find a weakened point for their attack, and even then, often without complete success. For instance, the tubercle bacillus asserts its presence to a certain extent, even on that especially fatal field, the lung, in a large proportion of the human species. It is estimated by some that as high as two or three out of every five young people suffer at some time in their lives from latent tuberculosis (Transactions of British Medical Journal-Tuberculosis 1898, by "Kelsch" and X-Ray), from which the great majority suffered no serious consequences. It is not remarkable, therefore, that there should be microbes found in iritic inflammation, but their presence alone does not necessarily prove their causal connection with it. They may be simply taking advantage of a condition found ready at hand.

The discussion therefore as to the actual microbic origin of sympathetic ophthalmia, while leaving the matter undecided as to the facts, are less important, as in no case could the question be positively settled without tracing actual inflammatory action by some route, either that of the optic nerve (?), the one most suspected means, or some other as yet unknown. It is far easier, therefore, and it may be fully as rational, to suppose some trophic influence acting first through the nervous system, preparing the way, or even setting up the actual lesions, than to assume the propagation of either microbes themselves, or even their products directly from one eye to the other. However we may leave the subject of sympathetic ophthalmia, it is nevertheless one of the puzzles of ophthalmologic practice, and is full of suggestively open questions; yet a clear demonstration of the pathologic importance of the iris and its inflammation.

Another feature of iritis that gives it importance among eye disorders is the pain and discomfort it produces. There is no other ocular affection, except possibly some

extreme cases of acute glaucoma (?), that can compare with iritis in this respect. This fact also would be sufficient, it would seem, to call attention to it more frequently, for while we may have exceptional cases of insidious progress—"quiet iritis" of Jonathan Hutchinson—the most ordinary symptom is pain, and this may be and often is most excruciating. Whether this pain be neuralgic or due to tension, as is usually the case, it is a serious symptom in itself, and one that alone ought, it would seem, to call more frequent attention to this disease in the literature of ophthalmology.

In what has been already said, the importance of iritis has, I think, been shown, and while much more could be offered, enough has been suggested to demonstrate that the existing comparative neglect of the subject is not justified by any lack on its part of clinical or pathological interest. While the etiology of the disorder has already been alluded to in one or two regards, it is so important a subject from a practical point of view, and one that is also still so unsettled in many respects that it deserves some discussion. I have already spoken in regard to the question of actual bacterial and of toxic infection, and expressed the opinion that the former is not essential, and when it is demonstrated may be a secondary condition. A question suggests itself, can we have a purely neurotic iritis, one in which direct infection, either by bacteria or their toxins, does not exist, and which is due to reflex trophic irritation? Such an iritis would probably not remain long uninfected, but I see no reason for denying its existence, and, as already suggested, it seems to me a natural mode of accounting for the puzzling facts of sympathetic diseases of the iris and ciliary body. And, again, the cases of iritis occurring in connection with neuralgic affections and the association with it of herpes zoster, as not infrequently found, are also suggestive in this connection, for there is no question as to the neurotic origin of the inflammation of herpes, however much infected with bacteria its lesions may later become. Sufficient proof have we, however, of a neurotic origin for certain forms of iridic irritation, that valuable time can yet be spent in investigation in this direction.

Taking, however, the well established causes of iritis in

which infection can be assumed, we find the first place occupied by syphilitic disease, the germ or toxin of which has neither yet been satisfactorily isolated, and yet one that seems to act especially through an intoxication of the system. The percentage of iritis due to this cause varies from 42 per cent. (Nettleship) to 70 per cent. by different authors (De Wecker), and we can probably estimate it with safety as the exciting cause of more than half the total number of cases of iritis that occur. This is in some respects a favorable fact, to be sure, for it is from this cause the more amenable to treatment, and, furthermore, syphilis is in general an avoidable disease by the individual. On the other hand, only a small proportion of syphilitic cases suffer from iritis. Seggel (*Arch. f. Augenh.* IX, 254), for example, found only 4 cases in 382 of constitutional syphilis, or only slightly over 1 per cent. It would appear that it is, with all its frequency, a rather infrequent complication, and is indirectly, therefore, a bad indication, as showing the great prevalence of syphilis. Iritis from rheumatism, which is generally estimated as next in frequency, though very much less frequent, is not like the preceding so much an individually avoidable disease, and its comparative lesser frequency taken with the very general prevalence of rheumatic affection, is therefore fortunate, as it indicates that it must be a rarer complication of rheumatism than of syphilis. Clemens of Berlin (1882) gives the remarkable estimate of 9 per cent. of all cases in the Ophthalmological Department of the Charite Hospital Berlin, while Nettleship in 1883 stated that 33 per cent. of all cases of iritis was rheumatic in origin, but from a large number of authors on this subject I feel warranted in estimating rheumatism to be the cause of a large number of cases of iritis, and from the very oscillating and manifestly obscure rheumatic symptoms, and our present knowledge of rheumatism increasing daily, as it is, I am led to feel that the per cent. of rheumatic iritis will be increased in the future, as there is perhaps no common disease confronting the medical man to-day more perplexing than rheumatism, and more obscure in its manifestation in many cases. The peculiarities of rheumatic iritis are well known; it is generally bilateral, and is probably the most painful of all types of the disorder, and likewise the most rebellious

and inclined to relapse on least provocation. It is frequently the first manifestation of the rheumatic diathesis, or the signal of an approaching rheumatic arthritis, and its recurrence appears occasionally to occur independent of any other marked rheumatic symptoms. It is not remarkable, however, that this should be so, since with the tendency once well established, the sensitive structure of the iris would readily relapse under the irritation of the toxins present. Until we know positively of a rheumatic germ and its habits, it is only speculation to assume it or any other form lying latent in the iris structure to revive its activities under fresh stimuli. That rheumatic iritis is directly infectious, however, would seem to be indicated by the experiments of Ahlstrom (*Centbl. f. Augenh.*, 1896, p. 95), who inoculated the eyes of healthy rabbits under all precautions with a bit of rheumatic iris, and reproduced the disease, while control experiments from glaucoma and catarrh were negative.

Syphilis and rheumatism are the two best known and most frequently recognized causes of iritis, and it is a notable fact that they both belong to a class of disorders that are supposed to act by producing a general dyscrasia, or intoxication of the organism, and that in neither of them has the original infective germ been satisfactorily proven to exist. It is true that discoveries of it have been claimed, but they are not yet recognized or proven to general satisfaction; while we know perfectly well that in both a systemic poisoning takes place. The same is true to a certain extent with diabetes, which was mentioned earlier in this paper as responsible for a certain proportion of cases. We may call acute rheumatism an infectious disease, but it is not so easy to admit all the forms of chronic, rheumatic and gouty affections to the same category, yet they may all, or most of them at least, produce iritis.

Syphilitic and rheumatic iritis, including probably over three-quarters of all cases, therefore, are suggestive of questions that can only be referred to here—questions that are yet unsettled in the etiology of iritis.

There are some interesting problems also connected with the iritis from infections that are well demonstrated as bacterial. Why, for example, should disease of the uveal tract be so common after relapsing fever, and be so infre-

## THE ETIOLOGY AND IMPORTANCE OF IRITIS.

it or absolutely unknown in connection with so many other equally infectious disorders is a point of interest, suggests a line of research that might be profitably worked up.

In germ diseases causing iritis in which the actual discovery of the microbe has been made in the inflamed eye not numerous, the usual organisms found are merely ordinary cocci of suppuration. Tuberculosis has been microscopically identified, and tuberculous iritis may be considered a well established type, and the frequency of tuberculosis renders this a very important fact. Gonorrheal iritis is probably diagnosed on the *post hoc* principle in many cases, but it probably exists, and indeed Krassnow recently (Woiennow Med. J., Nov. 1897), reported finding the gonococci in the pus from an iritis occurring the twenty-eighth day of a gonorrheal urethritis. An interesting case in my own experience in connection with this subject was the case of a young man whom I treated on different occasions for iritis of the right eye. The iritis at each time mentioned was not severe, but with no previous history of rheumatism or syphilis. At each time I treated him for iritis he was suffering from gonorrhea, complained of constant pain and suffering in right knee-joint. A question yet remains in my mind as to the nature of his iritis in the absence of microscopical finding. Can it be classed gonorrheal? Leprosy is said to be a frequent cause of iridic inflammation, according to Ziem (Arch. f. Augenh. XXII, 1890, 318), advanced leprosy nearly always affects the iris. This, however, with being a less frequently found malady concerns us less. Many other disorders are reported as occasionally complicated with iritis, among them malaria, which is especially characterized by its tedious course, and in which Brailey mentions two especially characteristic features, namely, its periodicity and proneness to recurrence; typhus and typhoid, varicella, influenza, and some cases have been reported as due to trigeminal neuralgia (Gould), and to structural disturbance and to suppurative affections of the nasal passages (Ziem, Fage). In some of these cases the diagnosis was apparently only by exclusion, and in many of them the disorder may be conceded as rare and exceptional, except probably in influenza, where hyperemia

of the iris is said to be frequent (Knies, *The Eye in General Diseases*, p. 394). In speaking of influenza, I would state that at this time I have in charge a young woman, 22 years of age, who upon recovery from influenza apparently not severe in its nature noticed her right eye to be very red, and two days later on rising in the morning was much surprised to find her pupil obscured completely by yellow film and the eye blind. The patient at this time was in Memphis, Tenn. She returned immediately to Chicago, and I was called to see her. I found the anterior chamber partially filled with pus, which resulted from an iritis. This was one week ago. At this time the pus is entirely disappeared, but the vitreous is very cloudy. At no time from its beginning has the patient suffered any pain, save a slight heaviness in supra-orbital region. I mentioned this in detail as it is much in keeping with this subject, bearing upon the relation of iritis to influenza.

We can summarize, I think, the facts that have been actually acquired as to the etiology of iritis, as follows:

1. A majority of all cases, ranging from 55 to 65 per cent. are due to syphilis, and a smaller proportion, varying, according to different estimates, from 10 to 20 per cent., may be accredited to arthritic toxins. The small percentage left is caused by various constitutional and infective disorders, with also a strong probability of the existence occasionally of a true sympathetic or neurotic iritis entirely distinct in its origin from any infectious process whatever. Traumatic iritis, except as it may indirectly give rise to the last-named form, is here unconsidered; its mechanical origin places it out of the scope of the present paper.

2. There is a wide range for speculation as to the mode of action of infections of the iris, but at the present time the facts point to the action of bacterial products or toxins rather than to that of the germs themselves. In only a few affections have the characteristic bacteria been found directly in the inflamed iris; in others only the ordinary pus cocci are present to indicate a secondary infection.

In what has been said, I have endeavored to invite attention to the importance of iritis, and to some yet unsettled questions of its etiology. It is, in my belief, one of the most important, if not actually the most important, of all

ocular affections. Ophthalmology, treating as it does of an organ that is primarily an optical physical apparatus, obeying the laws that govern the transmission of light, should be one of the most exact of medical specialties, but we must not forget that there is hardly any phase of pathology or any primary pathologic process that may not be in action in diseases of the eye. Iritis is an affection that does not appeal entirely to our surgical instincts, and it is therefore necessary that we should be as ophthalmologists, physicians as well as surgeons. There is certainly no eye disorder that is more full of interesting problems and suggestions, and none, it is probable, that when fully and properly studied is of greater promise as regards our therapeutic control.



# ABSTRACTS FROM RECENT GERMAN OPHTHALMIC LITERATURE.

Quarter Ending April 1st, 1899.

BY

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## **Influence of Tenotomy. Upon Vision.**

DR. WOLFFBERG, of Breslau. (*Wochenschrift für Therapie und Hiegene des Auges*, Jan. 19, 1899.) The author discusses the effect of tenotomy upon the sight and concludes that after a successful tenotomy, the squinting eye is improved not only as regards sight but also in color sense. He mentions several cases which vindicate the soundness of his conclusions. He calls attention to the fact that surgeons hitherto have expected little beyond correction of the deformity and he emphasizes the necessity of telling the patient that the improvement is not only a cosmetic one but also a visual one. In discussing this question before the Academy of Medicine (Paris) Javal expressed the opinion that the best results are gotten where both eyes are operated upon. The proper age is between eight and ten years. Fournier observed that strabismus was found so often in hereditary syphilis as to suggest the thought that there was a causal connection between the two affections. In fifty-two children affected with hereditary syphilis there were twenty-one which squinted. Almost half of such children squint. Furthermore tuberculosis and alcoholism in the parents play a role in the etiology of strabismus. While Panas and Javal agreed in thinking that strabismus had no such origin as a central one Panas contended that the best method was the operation on one eye only.



## ABSTRACTS, GERMAN OPHTHALMIC LITERATURE.

### **So Called Expulsive Intraocular Hemorrhage.**

. GOLOWIN, S. S. (*Die Ophthalmologische Klinik*, n. 1899.) Golowin goes over the subject of intra-ocular hemorrhage after operation and comes to the following conclusions. The cause lies in senile degeneration of the blood vessel walls. External influences such as operations are only exciting causes. If the changes are limited to the larger blood vessels, that is to say to the posterior ciliary arteries, microscopic examination reveals no changes in the choroid. If the smaller vessels also are involved then the hemorrhages can arise from a choroidal vessel, and in such a case we will find changes in the choroidal vessels. As a rule the eye is saved but Armaignac, Gasparini and others report cases in which the vision was preserved. Preventive measures are generally fruitless. Where the hemorrhage occurs, a compress bandage, application of ice, compression of the eyeball, all of these means may be tried. Abadie advises in such cases the injection of ergotine, and Trousseau puts a compress in the wound. It is peculiarly trying when a patient with a history of hemorrhage after cataract extraction comes for operation on the other eye. Here we must endeavor to build up and strengthen the patient in every way, in other words, to nullify as far as possible the effects of the hemorrhage. Warlomont and Willot recommend reclining and depression.

### **The Visual Acuity of the Dahomey Negroes.**

PROF. DR. HERMANN COHN. (*Wochenschrift für Therapie und Hygiene des Auges*, 29 December 1898.) Professor Cohn has recently had an opportunity of examining the eyes of quite a number of native Africans. It was found that they had somewhat over double the normal sight, and as compared to the school children of Breslau somewhat better sight than the latter.

### **Airol in Hypopyon Keratitis.**

2. GIOV. BONIVENTO. (*Klin. Therap. Wochenschrift*, 1899, 50-52.) The author treated in all about forty cases of hypopyon keratitis and with a few exceptions cured them all. So far as is recorded no such results have been obtained by any other method of treatment. Airol is

harmless, non-poisonous, odorless and unirritating. It is especially active in counteracting injection and exercises no injurious effect upon the cornea. In the majority of cases it produced no pain. It should be dusted into the eye twice daily. It is an almost sure preventive of corneal perforation and in addition to healing the corneal disease brings about a disappearance of all the concomitant symptoms such as purulent conjunctivitis, dacryocystitis, etc., L. von Lessen in a recent number of the *Deutsch. med. Wochenschr.* (1899. I,) has this to say of airol: It is a finely divided powder, grayish black in color and with a faint aromatic odor. It contains bismuth, gallic acid and iodine, which latter is broken up when it comes in contact with the tissues. It is particularly valuable in wounds and sores of all kinds, and when used for a long time does not like iodoform occasion eczema. He gives a long and interesting account of its properties and the conditions which call for its application. The clinical results have been verified by a number of observers, Haegler, Gallemaerts and others.

#### **Cerebral Amaurosis After Blepharospasm.**

PROF. BAAS, K., Freiburg. (*Münch. med. Wochenschr.* 24 Jan. 1899.) Baas reports a case of phlyctenular keratitis in a child of two and a half years of age. The keratitis was accompanied with the most intense blepharospasm. The case proved an obstinate one and was under treatment for many weeks and only began to improve after the operation of canthoplasty was performed. Small maculae were left on both corneae. The pupils reacted promptly to light and both fundi were normal. The mother noticed however that the child felt its way from chair to chair and gave every evidence of defective vision. This condition kept up for six months when the child died from an attack of broncho-pneumonia. Microscopic examination of the eye balls, chiasm, and optic nerves gave negative results. These parts were apparently absolutely normal. Leber thinks that in this class of cases, from having the lids shut for a long time the children had forgotten the use of their eyes and the trouble is really one of amblyopia from disuse. This explanation for his own case is accepted with a slight modification by Baas.

**The Curative Value of Mechanical Methods in the Treatment of Granular Conjunctivitis.**

KUHNT, HERMANN. (*Zeitschr. für Augenheilk. Bd. I. Heft.*) This able and prolific writer discusses in an interesting manner the mechanical treatment of trachoma. The advantages and disadvantages of the different methods of removing the granules are considered and the various instruments which are used for this purpose are described among others more than one devised by Kuhnt himself.

He sums up his observations, as follows: It goes without saying that certain cases demand certain lines of treatment. We must in other words individualize. If we are dealing with light cases in a region which is usually free of epidemics of trachoma we should always try the various medicinal means first. Even if the disease has existed for quite a time these remedies should be tried. We should not however persist with this method of treatment long especially if the cornea seems in danger, and improvement does not show itself, in which case we should at once resort to the galvano-cautery or to expression, even in localities which are immune so far as epidemics are concerned. The removal of the granules in such a case will certainly shorten the process and render safer the cornea. In regions where epidemics prevail the mechanical methods are only to be recommended as a general thing for the intelligent and better class of population, in short for those who know what cleanliness means, and are in the habit of practicing it. In those cases where repeated expression has failed excision should be tried.

**Subconjunctival Injections of Chloride of Sodium in Choroiditis of the Macular Region.**

DR. ROMAN BURRI. (*Zeitschr. für Augenheilk. Bd. I, Heft I.*) Burri describes this treatment in seven cases of macular choroiditis. In four of the cases myopia was the cause of the trouble, twice an injury and once a constitutional ailment. In two of the cases with myopia the result was good, and in one of the cases after traumatism the result was brilliant. Improvement was noted in all the cases. With one exception the visual field was widened in every case. In one case disappearance of the ophthal-

moscopic changes was complete. The conjunctiva should be anaesthetized with cocain and the entire contents of a Pravaz syringe should be injected right under the conjunctiva. Of course the solution must be absolutely sterile. The eye is then closed and a moist bandage is applied. The patient should remain in bed for four hours when the bandage can be removed. The injections may be repeated daily. Experience has shown that 2, 4 and 10 per cent. solutions of sodium chloride give the best results.

**Cataract After Ligating the Venae Vorticosae.**

J. R. VAN GEUNS—*von Graefe's Archiv. für Ophthalmologie*, Bd. XLVII, Ab. 2.) The author has repeated the experiments of Koster in this connection and has thrown some additional light upon this variety of cataract. Rabbits were the animals used. Ligation of all the veins is followed by increased intra-ocular tension. The iris becomes congested, and symptoms of intense hyperaemia are seen in all parts of the eye. These changes are later on accompanied with ecchymoses on the iris, and still later little streaks of blood may be seen running in a vertical direction on the surface of the anterior capsule. This blood apparently comes from the ciliary body. Four hours after the operation the anterior chamber is usually so full of blood that one can no longer see into the eye. In this stage we have marked exophthalmus, and conjunctival oedema. In a week most of the intense symptoms have disappeared, but the blood remains in the anterior chamber for many weeks and is absorbed very slowly. The cornea always showed changes, chiefly and almost invariably ectasia, or swelling, and sometimes even the formation of blood vessels was noticed in the cornea. In the four cases where the cornea was completely infiltrated with blood there was total cataract, while in the other cases only partial cataract was found. The changes in the lens were not to be seen in the early stages on account of the blood in the anterior chamber and it was only after this was absorbed that a study of the changes in this locality was possible. The author thinks that the condition of the epithelium in the capsule largely determines the extent of the cataractous changes. If the epithelium was injured as for instance in these cases where the intra-ocular tension went

up very high and remained so for days the fluid would get into the lens readily and bring about changes leading to cataract. On the other hand where the epithelium had not been injured the changes in the lens were always very slight and usually remained stationary. It was noticed too that as the intra-ocular tension subsided the epithelium of the lens would commence to proliferate, while in those cases where high tension persisted examination showed no trace of cell proliferation.

#### **Optic Neuritis Following Blow on the Skull.**

CRAMER, E. (*von Graefe's Archiv. für Ophthal.* Bd. XLVII, Ab. 2.) The author mentions an interesting case of choked disc following an injury. The particular class of cases to which this one belongs is where a fracture or lesion of the base of the brain can be excluded. In this latter class of cases it is of course much easier to explain the origin of the choked disc. In the case reported by Cramer the man fell and struck his forehead and was unconscious. When examined he had double optic neuritis. At first it was thought the eye lesion had its origin in a brain tumor, and that the fall was the result of an attack of vertigo so common in intra-cranial growths. As time went on, however, it was clearly shown that no such lesion existed in the brain. He was kept under observation for a long time and the most rigid examination failed to reveal anything abnormal in the cerebro-spinal system. Cramer quotes a somewhat similar case of Leber's who explained the optic neuritis on the assumption that there existed a basilar meningitis which had given rise to a descending neuritis. The meningitis could not have arisen from the hemorrhage but in the blood which escaped there must have been bacteria which finding, at the point of the injury, conditions favorable for their growth had settled here, multiplied and given rise to the cerebral inflammation.

Cramer concluded however that the optic neuritis was the result of an outbreak of tuberculous meningitis excited by the contusion. The author reviews the writings of von Bergmann in connection with head injuries, and calls attention to the fact mentioned by von Bergmann namely,

that the meningeal symptoms which follow injuries closely resemble those of tubercular meningitis.

### **The Operative Treatment of High Grades of Myopia.**

FUCHS, PROF. E. (*Wiener klinische Wochenschrift.*, 9 Feb., 1899). This well known Vienna ophthalmologist is no great friend of the operative treatment of myopia. These are the indications for the operation. 1st. Only when the myopia is over fifteen dioptries and when the fundus changes are not so pronounced as to cause a central scotoma. 2d. Only when the patient is under forty years of age, and never on an eye when its fellow is useless. The operation is not absolutely necessary for the preservation of sight and it is not free from danger. Even after the operation, the eyes must be spared all constant use and can not be regarded as healthy eyes for the fundus changes still go on just the same. The operation does not seem to prevent ultimate changes, seen in myopia, as for instance atrophic areas in the choroid, retinal hemorrhages, and retinal detachment. He concludes, however, by saying that while in a certain number of cases the operation is justifiable this number is very small and that the operation is performed far too often. Among eighteen thousand new patients in his clinic only ten were found which were suitable cases for the operation.

### **Müller's Improved Artificial Eyes.**

(*Wochenschrift für Therapie und Hygiene des Auges.* 16 Feb., 1899). The well known manufacturers of artificial eyes in Munich have recently put on the market another kind of artificial eye, for which they claim many advantages over the old fashioned eye. The new eye no longer finds its chief support in the folds of transition but it rests direct upon the stump. The concavity is shut in behind by a dish shaped piece so that the eye is really a hollow body. It is claimed that the eye possesses greater movability. There is no longer seen the collection of secretion behind the eye so often met with in the old eyes nor does it irritate near so much as the latter. It can be worn over night. Its durability is greater. It may be said that they have been endorsed by Prof. Snellen, in an ar-

ticle in the March number of *Klinische Monatsbl. f. augenhk.*

**Statistics of Losses After the Operation of Ripening (Förster)  
Cataract and Remarks in General Upon the Opera-  
tion for Unripe Cataract.**

SCHEFFELS, O. (*Ophthalmolog. Klinik*, 1899. 3). The author goes into quite a long discussion of this subject and reports a number of cases and gives these as his conclusions:—In cases of arterio-sclerosis and in high grades of vitreous liquefaction the Förster operation is contraindicated. The operation is superfluous in the following types of immature cataract such as have been described by Alfred Graefe. 1. The so called nuclear cataracts with dark yellowish or brown and transparent nucleus with here and there small points or striations in the cortex. This variety of cataract develops, generally, in myopic eyes after the fiftieth year.

2. In cortical cataracts where the posterior layer becomes thickened into a scale-like clouding while in the relatively transparent anterior and central portions localized cloudings may be seen. 3. Lenses with irregular striations and opaque islets which are imbedded in transparent lens substance and are situated usually in the cortex. This variety causes pronounced visual disturbances and remains unchanged for a long time.

**Blepharitis Acaria. A Disease of the Eyelashes and Borders  
of the Lids Caused by Parasites (*Demodex follicularum*)  
In the Hair Follicles.**

RAEHLMANN, E. (*Klinische Monatsbl. für Augenheilk.* Feb. 1899). Raehlmann describes this variety of lid affection and refers to the only other contribution in this connection, that of Stieda in 1893. (*Centralbl. f. prakt. Augenheilk.* XIV. pge. 193). In looking for the parasites, one must put the freshly epilated hair on a slide and examine with a low power in water. One will find in the hair follicle not only the male and female parasite but also the larvae, the embryos and eggs, proving that the entire process of generation takes place in the hair follicle. In addition to the living parasites there will be found, also, the metabolic products, the excrement, etc., either sticking



close to the shaft of the hair or lying next to it. When objective symptoms are absent the patients usually complain of the eyelashes dropping out and of great itching of the lids. In most cases, however, there is marked hyperaemia of the inner zone of the lid border and also of the outer or anterior border of the lid. Usually there is marked hyperaemia of the conjunctiva in this vicinity. There is often present a sticky secretion like thick honey or impure vaseline, which hangs to the base of the hair in clumps. Sometimes only points of the lids seem involved while in other cases the redness and hyperaemia extend along the entire intermarginal border of the lid. In many cases the changes described coexist with diseases of the cornea or of the conjunctiva. This condition is seen in twenty-five per cent. of trachomatous eyes.

The most effective treatment is the application of an ointment consisting of balsam of Peru one part, and three parts of lanolin. Rapid improvement generally follows this treatment and the subjective symptoms disappear in twenty-four hours.

**The Medical and Surgical Treatment to be Followed When the Eye Affected is a Very Protruding One.**

PROF. AXENFELD, of Rostock). (*Klinische Monatsblt. für Augenheilk.* Feb. 1899). Axenfeld describes his method as follows: The first case was one of cataract. In such cases Czermak and others recommend holding the lids open with the fingers, but in a case of cataract extraction where this was done, Axenfeld's patient contracted the lids violently and the lens popped out, followed by a good deal of vitreous. Such cases, he thinks, are not safely managed by using the fingers for a speculum, and he believes that the elevator of Desmarres fulfills all the requirements of this class of cases. Of course a speculum is not to be thought of for a moment, as in these cases it is almost impossible with a speculum to avoid pressure being made upon the eyeball. What is wanted is something which elevates the lids and at the same time pulls them slightly forward. He thinks, too, that cataract in eyes affected with exophthalmos should be extracted under a general anæsthetic. Axenfeld goes on to speak of the use of the



compress bandage in such cases and shows how this kind of a bandage would be apt to exercise pressure on the point of the cornea only, and in the case of a cataract extraction the wound would naturally gape. Whenever a compress bandage is needed for an eye which protrudes his advice is to make a circular bolster embracing the entire area of the lid and then fill up in the middle with cotton until we have a flat surface. This kind of compress bandage is always to be employed in very protruding eyes. He closes his observations by reporting a case of gonorrhoeal ophthalmia in a protruding eye and the treatment pursued. The patient was affected with Basedow's disease and the exophthalmus was so excessive that the lachrymal glands were displaced and could be felt free beneath the lids. The treatment consisted in douching the eye with a solution of Hydrargyrum oxycyanatum 1.1000. The solution was injected from a syringe which Panas has devised for washing out the anterior chamber. The syringe has a flat shank and can be pushed far back under the upper lid. Every hour or two one-half liter of the solution at body temperature was injected well back under the lid. This was kept up night and day with the result that one eye completely recovered and the other eye was left with a slight prolapse and an incarceration of the iris, which was remedied by an operation.

#### **The Field of Vision in the Myopic.**

WEISS, PROF. DR. LEOPOLD, in Hamburg. The author, whose studies for the past year have been largely on the subject of myopia, discusses in his monograph with the above title the visual field of the myope. He speaks of the enlargement of the blind spot, whose extent, however, stands in no connection or relationship with the cone seen with the ophthalmoscope. As a rule the visual field is narrower and the color boundaries correspondingly narrowed which can be relatively limited to still narrower boundaries than the outer boundaries for white. The changes in the visual field must not be regarded as a prominent symptom of myopia, for in high grades of myopia the visual field may be normal while in low grades of myopia the visual fields can be markedly restricted.

Appropriate and interesting fields illustrate the monograph.

**Haab's or Hirschberg's Electromagnet.**

LINDE, MAX. (*Centralbl. für Augenh.*, Jan. 1909), considers it desirable to determine the exact indications for the application of each of these magnets, because the great strength of one often produces injury, and, the low power of the other is often insufficient. He reviews a number of the cases, published from the Vienna clinic, by Sachs, to show that while the foreign body was removed by the Haab giant magnet the eyes were more seriously damaged by the operation than by the original injury. In several instances either the iris, lens or the ciliary body was injured, in one case ultimately necessitating enucleation of the eye, and, in another, the magnetic force was sufficient to drag the piece of metal through all the coats of the globe at a point near the wound of entrance. It is not a triumph of science simply to remove a foreign body from the eye but the saving of the eye with useful vision should also be considered. This end, he believes, can be best attained in the majority of cases by use of the Hirschberg magnet. If there be an opening into the anterior chamber, the application of Haab's instrument is likely to cause prolapse of the iris, hemorrhage into the anterior chamber or rupture of the zonule, while, if the opening be in the chamber, unless Hirschberg's method of making a clean cut in the vitreous body be adopted, the injury to the vitreous may cause shrinking of the latter and detachment of the retina. The great power of the giant magnet causes a metallic substance, in its rapid course toward the magnet, to tear its way through opposing tissues and thus inflict as much damage as the primary injury.

In those cases where the foreign body is fastened in the angle of the anterior chamber or is so situated that it cannot be approached by the magnet probe, the Haab giant magnet is necessary.

Linde believes that the Hirschberg magnet should be given the preference in the majority of cases. He also calls attention to the great value of the Asmus sideroscope in locating the suspected bit of metal.

**The Employment of Protargol in Diseases of the Eye.**

MESSNER, ADOLPH. (*Centralb. für Augenh.*, Jan. 1899), has used Protargol in a variety of conditions. His most marked successes were obtained in the treatment of acute and chronic dacryocystitis. In this condition he injects the tear sac twice daily with a solution of protargol, by means of Anal's syringe introduced through the previously slit canaliculus and marked improvement is expected in from two to four days. Ophthalmia neonatorum, purulent ophthalmia and those cases of trachoma, in which there is considerable secretion, were treated with as favorable results as attend the use of silver nitrate. In cases of trachoma with pannus it acted unfavorably and in conjunctival inflammations attended by watery secretions it was of no value. Finally, in dry catarrhs it produced burning and irritation.

**Observations Upon a Case Where There Was Present a Retraction Movement of the Eye.**

Türk's (*Centralb. für Augenh.*, Jan. 1899.) observation was upon a patient, aged 42 years, who complained of asthenopia, and who, on examination, was found to have a peculiar muscular anomaly of the left eye, believed to be congenital. The patient held his head generally turned to the right about ten to fifteen degrees, so that the R. E. stood in slight adduction and the left in slight abduction. The L. E. possessed almost no power of abduction, and, in adduction was drawn into the orbit about 2 mm., and deviated a little upward, while the palpebral fissure at the same time became narrowed. Retraction of the eye also took place with any effort to look inward and upward or inward and downward. Pupillary action normal. Ophthalmoscopic examination discovered only a slight atrophic crescent on the disc. Vision with  $+ 2.5 D = 5/5$ . Right eye normal with vision of 5/5.

Türk recalls two similar cases seen in 1896 and four others reported, one each by Heuck, Stilling, Macle hose and Bahr. He considers the condition as congenital and that retraction of the globe may be occasioned by the action of one muscle when its opponent is attached too far back and the eye so situated that the rotation power is prejudiced to the other side, or, when the muscle consists

only of an unyielding band of connective tissue with a few muscle elements. The sinking of the upper lid and narrowing of the palpebral fissure are secondary effects and due to the loss of support occasioned by the retraction of the eye.

#### **Operative Technique for Ectropion of the Lower Lid.**

WICHERKIEWICZ, B. (*Beiträge zur Augenh.*, Vol. XXXVII, January, 1899), operates in the following manner: four to six inches below the free lid margin a cut is made parallel with and somewhat longer than the palpebral fissure. The skin is dissected free above and below the line of incision, the tarsal portion of the orbicularis is separated and pushed upward, while the tarsal plate is at the same time drawn downward by a small pointed hook, so that it lies entirely bare. Now a moderately strong silk suture is inserted. First pass the needle through the upper edge of the skin wound, then under the pushed out tarsal portion of the orbicularis, through the orbital fascia, and now over the orbital part of the orbicularis, then straight forward between this and the skin and out through the skin near the lower orbital edge. Three sutures are introduced in this way and all tied over a cotton tampon. Pressure bandage is applied for one day and the sutures may be removed after four days.

Through this method he aims to attain the following results: 1st. The displaced portion of the orbicularis is brought into its correct position. 2d. It is fastened to the skin and orbital fascia, and 3d, through temporary skin wrinkling, considerable support is given. It acts in part like the operation suggested by Dr. Hotz.

#### **Treatment of Acute Optic Neuritis Following Influenza.**

From the clinic of DR. GELPKE in Karlsruhe, i B. by DR. ERNST WINGENROTH. (*Klinische Monatsblt. f. Augenheilk.*, March, 1899.) The author reports three cases of papillitis which were characterized by neuralgic symptoms and with pain, both on pressure upon the eyeball and when the eyeball was moved in certain directions. In all three cases the affection was unilateral. Syphilis could be absolutely excluded, and the only demonstrable cause was the influenza from which all had suffered. As we know,

neuritis is usually treated by local blood-letting, injections of pilocarpine, iodide of potash, etc. The interesting feature in the treatment of these cases was the fact that all these remedies were tried but without avail. The institution, however, of the inunction treatment was followed by prompt disappearance of the symptoms and permanent improvement in vision. One drachm of the ointment was rubbed in every day, that is to say one-half drachm in the morning and the rest at night. A very important factor in the treatment was bodily cleanliness, and wherever possible a bath was ordered to be taken every day, usually before the evening inunction. Attention too should be directed to the bodily weight. The patient should be weighed every eight days. An increase in weight calls for a larger dose of the mercury. A decrease in weight calls for a diminution in the size of the dose. The teeth should be brushed after each meal and the mouth washed out with a solution of chlorate of potash, and in this way such complications as stomatitis, etc., were avoided.

#### **A Case of Double-Sided Pulsating Exophthalmus.**

REIF, ERNST (*Beiträge zur Augenhil.* Feb. 1899), reports the following interesting case:

Annie S., servant girl, came to the eye clinic of the University of Griefswald June 5, 1898. One year previous she had slipped out of a hay wagon, and falling under the horses was kicked in the face, receiving a fracture of the left upper jaw with dislocation of the alveolar process, and also a fracture of the left lower jaw. In the latter part of May, 1898, she received a heavy blow over the head and right eye with a cow's tail, and on the morning of June 3d, while lifting a heavy milk can she felt a severe pain in the right eye, which immediately became swollen and red. She continued at work all this day, but the next morning was compelled to send for a physician. On admission it was noticed that there was a high grade of protrusion of the right eye, the apex of the cornea standing about 5 mm. in front of the orbital margin. The lids were oedematous, conjunctiva injected, and in the lower half so chemotic that it overlapped the lower lid and entirely concealed the eye lashes. Upon this chemotic conjunctiva were small

erosions. The cornea was smooth, clear and could be covered by forced closure of the lids. The optic disc was hyperæmic, its borders indistinct, the veins dilated and tortuous. Tension normal.

On the left side the conjunctiva was strongly injected, and on ophthalmoscopic examination the retinal veins seemed somewhat full and tortuous. R. E. V.  $\frac{1}{3}$ ; L. E. V.  $\frac{2}{3}$ .

By pressure upon the right eye a distinct pulsation of the globe was felt, synchronous with the patient's radial pulse, and if continued the eye could be pushed back about 1 mm. without much pain, but with relaxation it immediately protruded to the same position as before. Application of the stethoscope to the closed right lids gave a murmur continuous with the systolic beat, and it was heard with equal distinctness over the right half of the head. Further auscultation of different spots of the head showed that pulsation murmur could be heard on the left as well as on the right side, perhaps loudest over the left mastoid process, and finally by auscultation over the left globe the noise was more distinct than in the right eye. A closer inspection of the left eye now elicited pulsation when pressure was made with the finger, but the protrusion of the globe was slight. There was also a slight paresis of the left external rectus.

The author in searching for a cause of the exophthalmus concludes that at the time of the injury to the jaw there was also a fracture at the base of the skull with an insignificant rupture of the left internal carotid and the cavernous sinus, but this was overlooked because of the greater external injury. Through the slow and gradual escape of the blood from the sinus the venous collateral circulation had sufficient time to overcome the congestion, and a high grade of protrusion did not come about at once. In fact, spontaneous healing was probably going on when a thrombus formed in the superior ophthalmic vein which blocked the junction with the cavernous sinus. By the slow developing of branches the inferior ophthalmic vein anastomosed with the pterygoid plexus in order to take care of the entire venous flow of blood from the left orbit.

The explanation for the sudden origin of the right-sided exophthalmus is this: that through some considerable raising of the blood pressure the small rent in the left internal

carotid was caused to spread; this may have been the blow on the side of the head, or the lifting of the heavy milk cans, and through the further bursting, the arterial blood now flowed in greater quantity into the cavernous sinus, and could only pass off through the vessels of the dura, which communicated with the latter (sinus), since the route to the veins of the left orbit had been obstructed by a thrombus.

In this case a high grade of congestion set in which could not be overcome by the collateral veins and so in a short time produced a right exophthalmus. The circumstance, that the arterial blood waves on their way to the right side had to overcome more curves, made the pulsation appearances less expressive than on the left side, where the blood stream crowded against an organized clot through which pulsation was transported directly to the contents of the left orbit.

By compression of the left common carotid it was found that at once pulsation and murmurs over both eyes disappeared, and the reposition of the right eye was possible without strong pressure, and the treatment adopted therefore was rest in bed with a boric acid gauze bandage to the right eye and digital compression of the left carotid continued for three or four minutes at a time during the first few days and gradually increased each day thereafter. This was continued until October 14, 1898, when the right eye was in normal position and patient was able to return to her work, though there was still some fullness of the retinal veins and a slight murmur on the right side. Pulsation had disappeared and vision about 1. The condition on the left side remained practically unchanged.

#### Internal Treatment of Glaucoma.

WALTER, DR. O. of Odessa. (*Die Ophthalmologische Klinik*, November 5, 1898.) The author quotes the opinions of Czermak, Schmidt-Rimpler, Jacobson, Eversbusch and others going to show the connection between glaucoma and gout. All of these observers suggest the advisability of employing anti-gouty remedies.

Walter reports a case of acute glaucoma, where in addition to instillations of pilocarpine, one gram daily of piperazine was given internally for ten or fifteen days with the effect of bringing about a complete disappearance of all



the symptoms and a return to normal vision. Still another case of a woman 56 years old, who had long been a sufferer with articular rheumatism, and one of whose eyes had been iridectomized for glaucoma. The other eye now showed symptoms of glaucoma. It may be said that the operation had not been successful, but had been followed by more or less degeneration of the eye with minus tension. The patient was put on one gram daily of the piperazine dissolved in carbonated water, and was kept on this treatment for three weeks. The result was a complete disappearance of all the glaucomatous symptoms. Most of the time no pilocarpine was used, so it was evident that the happy result must be attributed largely if not entirely to the internal treatment. It should be added that improvement was also marked in the eye which had been operated on unsuccessfully for glaucoma years previously. While the author does not underrate the value and necessity of iridectomy in certain cases, he concludes that there are cases where the internal treatment in the manner suggested is of distinct benefit.

#### **The Treatment of Hypopyon Keratitis.**

ZIRM, DR. EDUARD, of Olmutz. (*Wiener Klinischen Wochenschrift*, November 9, 1898.) The author reviews the various methods of treating this serious affection, and then goes on to give his own ideas on the subject. He lays a good deal of stress in these cases upon sterilizing as far as possible the conjunctival sac, preventing in other words further additions to the number of bacteria already at the site of the inflammation. For a long time he was in the habit of using iodoform, and later on took up airol with excellent results. The airol was dusted over the ulcer, and there was soon formed a thin covering from the precipitate of the powder, which acted as an obstacle to the further invasion of bacteria. The disadvantage however in using airol, according to Zirm, consisted in the fact that this product was rather irritating. He then substituted xeroform with happiest results. This agent can be used several times daily. In cases where there is a coexistent dacryocystitis Zirm is in the habit of injecting into the lachrymal sac an emulsion of xeroform. Of course the author uses the galvano-cautery whenever necessary, but to get the desired effects above mentioned, the powder (xeroform) is dusted over the cornea three times daily.



# ABSTRACTS FROM RECENT FRENCH OPHTHALMIC LITERATURE.

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QUARTER ENDING MARCH 31, 1899.

## **Total Combined Keratotomy Followed by Sutures. Application of the Method.**

PANAS, Paris. (*Archives d'Ophthalmologie*, Volume XVIII, Number 9.) This operation has proven so successful in Panas' hands that he has practically discarded the operation for enucleation. In panophthalmitis he prefers the operation of exenteration. He states that most authorities teach that when one operates for the avoidance of sympathetic ophthalmia due to irido-cyclitis, or for the cure of the same not only should the eye that has been primarily affected be removed, but that the optic nerve should be excised as far back as possible. From this the author differs widely. A long list of cases has convinced him that his method of operation may be performed in this type of cases with the greatest safety.

The advantages of the procedure are obvious. The stump is full and round and supports an artificial eye with comfort.

He proceeds in the following manner: The patient being anesthetized, a speculum is introduced between the lids. The eyeball is seized with a fixation forceps. A half-curved Reverdin's needle is then passed through the sclero-corneal junction back of the iris and the crystalline lens, and is made to come out of the eyeball at the opposite sclero-corneal junction. The needle, which is to remain in situ until the last stages of the operation, is next threaded. By means of a von Graefe knife, introduced at the point of

union of the transparent and the semi-opaque portions of the cornea, the cornea is freed throughout for about four-fifths of its circumference. The keratectomy is completed by a couple of strokes of the scissors.

In case the iris has not been detached with the cornea it is seized with a pair of forceps and is removed. The speculum is next gently raised away from the globe and the lens is removed with a scoop. The wound is closed by withdrawing the Reverdin needle armed with its thread and this suture is reinforced by one on each side. To complete the operation the projecting angles of the wound are trimmed off with a scissors. As a rule there should be no hemorrhage. A one to twenty thousand strength solution of biniodide of mercury is used to cleanse the wound. The stump is dusted with iodoform and a dry dressing with a layer of iodoform gauze is placed next to the lids. At the end of three days' time the dressing is changed, and four days later the sutures are removed. About fifteen days after the performance of the operation, the dressings are permanently dispensed with. Those cases in which there is total loss of vision accompanied with great pain due to absolute chronic glaucoma, etc., offer the greatest field for this procedure.

**Pseudo-Membranous Kerato-Conjunctivitis. Cure Effected by Three Injections of Anti-Diphtheritic Serum.**

DARIER, Paris. (*La Clinique Ophtalmologique*, January 10, 1899.) This case is interesting on account of the fact that the palpebral conjunctiva was but slightly involved, the corneal and the ocular conjunctival membranes being quite markedly affected. Owing to an accident the only specimen for bacteriologic study was obtained after protargol had been applied, the findings being negative. Two injections of ten cubic centimeters each and one injection of twenty centimeters were given, effecting a cure. From this therapeutic result, the author concluded that the disease was diphtheritic in nature.

**On the Method of Development of Conjunctivitis.**

DEWECKER, Paris. (*La Clinique Ophtalmologique*, January 10, 1899.) DeWecker, considering that the con-

conjunctiva is not immediately infected, but that the germs lodge on the lids and thus reach the membrane, suggests that more attention should be paid to the skin-surfaces that surround the eye than is now done in our efforts for prophylaxis. In the case of the new-born he recommends a thorough cleansing of the lids and the surrounding parts of the face, followed by sterilization by means of cyanide or oxycyanide of mercury. This is to be done immediately after the birth of the child, and is to be repeated as soon as possible after the first bath.

**Ocular Accidents Dependent on Epidemic Influences.**

GALEZOWSKI, Paris. (*Recueil d'Ophthalmologie*, December, 1898.) Galezowski states that five distinct types of ocular disease are caused by la grippe. The conjunctivitis noticed is rarely purulent in character being usually of catarrhal nature. Generally speaking, the epithelium of the conjunctiva and at times that of the cornea, are the parts that are involved, the trouble in the latter type appearing in the form of small herpetic ulcers. The cornea becomes covered with vessels and the whole eye is vascularized and irritated. The author believes that the bacillus of Pfeiffer gives rise to this form of disturbance. Usually both eyes are attacked, and frequently the iris, the lachrymal ducts, and the edges of the lids are involved. The author has found that the lachrymal types of conjunctivitis are sometimes quite marked, the diseased areas being clearly limited. These cases produce peripheral functional troubles which in their turn through their toxins act as causative agents. These forms present symptoms that resemble the changes seen in diphtheritic and granular conjunctivitis. In this type general therapy is much more useful than local treatment.

The cornea may be attacked in two ways; either as the influenza acting as a predisposing cause, renders the tissues less resistant, or else the disease produces trophic changes that give rise to loss of transparency, ulcers and abscesses. Central lesions may follow attacks of la grippe. These may be of the nature of softening of the nervous structures or dependent on changes that are due to thrombosis or embolism. Serous retinitis is to be regarded as being a fairly frequent sequel of the affection. This is

due, the author says, to an inoculation of malarial germs into a system that is already weakened by the primary infection. It readily yields to quinine. Conditions such as glaucoma, plastic irido-choroiditis, etc., are also precipitated by attacks of the influenza in patients having a predisposition to such diseases. Galezowski attributes the epidemics that we have had to the meteorological conditions which exists during those seasons of the years in which the disease is particularly prevalent. During those years in which the average readings of the barometer have been high, the disease has been of a less virulent type than when the readings have been low.

Treatment varies with the parts that are affected and with the severity of the attacks. In conjunctivitis, nitrate of silver and sulphate of zinc are given the first place. In herpes of the cornea. ointments containing iodoform and cocain have rendered the best results. A general tonic treatment with the continuous use of quinine is to be maintained.

**On the Diagnosis of Pareses of the Muscles of the Eye by the Study of Diplopia.**

VIEUSSE, Toulouse. (*Recueil d'Ophthalmologie*, December, 1898.) Vieusse ventures his diagnosis entirely on the form of the diplopia as revealed by the use of a candle and a red glass. He states that homonymous diplopia indicates a paresis of either the external rectus muscle or one of the oblique muscles. Crossed diplopia denotes an involvement of one of the remaining three muscles. If the images are homonymous and horizontal, the external rectus muscle is the one that is at fault, the affected eye being determined by turning the head to the right and to the left. If the images approach one another as the head is turned, the paralyzed eye will be found on the side that is situated toward which the head is turned. If they separate, the converse is the case. If the diplopia be homonymous and oblique, one of the oblique muscles is at fault. If the false image is placed superiorly to the correct image, it is the inferior oblique that is affected. If it is situated inferiorly the superior oblique is the one. In cases of horizontal crossed diplopia the faulty eye is determined as above except that if the images approach one

another the affected muscles belong to the side which is removed from the direction that the head is turned, and *vice versa*. When the images are crossed and the false image is situated above, the inferior rectus muscle is inactive. If the false image is below, the superior rectus muscle is the one that is disturbed. All of these tests may be verified by perimetric studies.

**Episcleritis and Anterior Sclero-Cheroiditis.**

GRANDCLEMENT, Lyons. (*La Clinique Ophtalmologique*, 10th February, 1899.) Grandclement takes up his pen once more in defense of subconjunctival injections of cyanide of mercury as the remedy of choice to be used against this persistent disease. He employs it in the strength of one to fifteen hundred, injecting it either at the level of the infiltrated area or through it.

**Experimental Researches into the Penetration of Aqueous Collyria of Iodide of Potassium into the Eye.**

ULRI, E. and FREZALS, Bordeaux. (*Archives d'Ophtalmologie*, January, 1899.) These authors state that for some time past Badal has employed collyria of iodide of potassium in connection with the internal administration of the same drug. The authors (his assistants) have analyzed the aqueous and the vitreous humors of the eyes of rabbits that had been treated with the instillations alone, with a combination of the two methods, and with subconjunctival injections. The summing of their results is as follows:

1. Iodide of potassium in aqueous solution placed on the conjunctiva penetrates into the aqueous humor.

2. The drug is found in the vitreous body only after it has entered the general circulation (as shown by its presence in the urine.)

3. When the amount of the drug administered by means of the digestive tract is that of the medium clinical dose, the humors of the eye do not give the reaction of iodine; it is passed only in quantities that are inappreciable by means of the methods that are usually employed.

4. By using both the conjunctiva and the digestive tract as the means of entry of the drug, much greater amounts of the material can be made to reach the anterior chamber than otherwise.

**Etiology and Pathogeny of Anterior Polar Cataract.**

NUEL, Liege. (*Archives d'Ophthalmologie*, January, 1899.) According to Nuel's observations, this form of cataract is acquired during extrauterine life, and is most frequently the result of "blennorrhagia of the new-born." This opinion is based on four cases, two of which were treated by the author, and two by a colleague for ophthalmia neonatorum all of which developed anterior polar cataracts. He believes that the condition is due to the contact of the material from the inflammatory process, the position of the cataract being in that part of the lens-surface which is unprotected by the iris. His belief is strengthened by the fact that in all these instances the cornea is found to be more or less infiltrated.

**Follicular Conjunctivitis and Adenoid Vegetations of the Naso-Pharynx.**

COPPEZ, Brussels. (*Archives d'Ophthalmologie*, January, 1899.) Coppez insists upon the facts already noticed by Snellen and others, that follicular conjunctivitis is frequently associated with adenoids of naso-pharynx, and that the removal of these growths facilitates the cure of conjunctival inflammation and at times is absolutely essential for the cure of the condition.

**Complimental Researches on the Oily Collyria.**

SCRINI, Paris. (*Archives d'Ophthalmologie*, January, 1889.) In this second paper on the subject, the author gives the results of his more recent experiments. His findings lead him to speak favorably of many of the preparations. Probably he says, their chief advantage is that of increased power and quickness of action. Two cases he describes in detail, in which the aqueous solutions of eserine had previously failed to produce any effect, but which yielded promptly to the solution of the same drug in oil. Several additions are made in the list of the drugs that were mentioned in the last article.

Pure duboisin dissolves readily in the proportion of one per cent. in olive oil or "l'huile d'arachide," at a temperature of 90° C. Pure homatropine dissolves in the same strength at a temperature of 80° C. Scopolamine in the

form of the bromo-hydrate can be first dissolved in alcohol; this solution should be mixed with oil in the proportion of one per cent. The oil may then gently be heated and the alcohol evaporated. Daturine and hyoscyamine act in the same way as homatropine except that the solution does not remain absolutely clear. Mydrine mixed with homatropine and ephedrine dissolves with difficulty, but by first dissolving it in ether a three per cent. solution may be obtained.

Pure cocaine and holocaine may be made into solutions in the strengths of three per cent. at a temperature of 80° C. The holocaine soon undergoes a change in color which takes place more rapidly if the preparation is kept in a glass vessel than it does if porcelain be used for that purpose. With tropococaine the author has been successful.

Caffeine, dehydrated or not, strophanthine and adonodine do not dissolve in oil, while on the other hand carpaine, convallarmarine and helleborine form perfect solutions.

**On the Treatment of Trachomatous Conjunctivitis by Excision of the Conjunctival Cul-De-Sac.**

GALEZOWSKI, Paris. (*Recueil d'Ophtalmologie*, January, 1899.) The best medicinal measure for trachoma in Galezowski's hands has been the "mitigated stick of nitrate of silver" which consists of the nitrate of silver mixed with nitrate of potassium. This failing he resects the affected portions of the conjunctiva. He has found that three things are essential to the success of the operation, viz: 1. To excise nothing but the conjunctiva; 2. The excision should reach from angle to angle; 3. The tarsus should not be touched.

**Nervous Defects as Factors in Strabismus.**

DEMIGAS, Toulouse. (*Annales d'Oculistique*, February, 1899.) The author bases his paper on his own observations in twenty-one cases, and upon the works of Valude, Borel, Parinaud and Charcot. His conclusions are:

1. Hysteria gives rise to a particular form of strabismus that has been studied by Borel, and which has its own characteristics that consist above all in transient ocular spasms.



When a permanent strabismus becomes temporarily augmented through emotion it is considered as an hysterical exacerbation of the concomitant variety.

2. The establishment of true strabismus requires two things; a disturbed disposition of the organs concerned in binocular vision and a nervous defect. This nervous affection may be found to exist, generally, if not always, in some of the progenitors of the patient, as proven by the author's observations; it not being necessary that this should be found in the direct ancestors. Frequently the patient himself shows a transmitted nerve stigmata. The faults most frequently found in the direct ancestors are idiocy, mental disturbance and epilepsy.

3. Strabismus is a sign of complex degeneration, since its development, outside of nervous imperfection, requires an association of conditions. This explains why it is that such subjects, although degenerate in type, may be themselves exempt from grave nervous manifestations, such as epilepsy, alienation, etc., and as a rule procreate healthy children.

4. Direct hereditary strabismus is rare: when a subject with strabismus is born of a parent with strabismus the nervous defect should always be searched for on the side of the faulty transmitter.

5. It would be interesting to trace the connection which exists between the different manifestations of alienation of the progenitors and the forms of strabismus of the descendants. The author has found that esophoric patients in asylums are gloomy, while the exophoric ones are loquacious.

6. If an ametropic subject is born of parents having some nervous imperfection, it would be well to examine his refractive condition carefully and to employ all possible means to develop binocular vision.

7. The results from operations for the cure of strabismus should be better in proportion as the hereditary traces are farther removed and as the patient is freer from taint.

8. In order to maintain the good results that have been obtained by operation it is well to insist upon a prolonged course of treatment such as baths, douches, the bromides, etc., which are to be directed toward the nervous condition of the patient.



9. The operator should at first do as little as possible, especially if the subject be young, in order that he may avoid the risk of causing a convergent eye to diverge.

The author believes that it is impossible to grade the operation with exactitude and says that the nervous factors may create very disagreeable surprises.

He states that successive operations are exempt from danger, and moreover he has found that the parents will readily consent to such a method of procedure if the matter is explained to them in advance.

**A Case of Zona Ophthalmia with Interstitial Keratitis, without Epithelial Lesions.**

KOSTER, Leyden. (*Annales d'Oculistique*, February, 1899.) This case is published as being an addition to the list of the various types under which this disease may appear, as summarized by Sulzer (*Annales d'Oculistique*, June, 1898).

The herpes manifested itself upon the forehead. The ocular disturbances consisted in a parenchymatous keratitis with iritis. Both the superficial and the deep vessels of the anterior part of the eye were much injected. The cornea was not anesthetic. The peripheral portions of the cornea were clear, but the central part of the membrane was cloudy and filled with punctate areas. There was no corneal vascularization. A certain amount of ptosis existed. The author admits that he is in doubt as to the exact etiology of the ocular affection.

**Foreign Bodies (Cilia) In the Anterior Chamber of the Left Eye.**

METAXAS, Athens. (*Annales d'Oculistique*, February, 1899.) The cilia in Metaxas's case were pushed into the eye by a penholder with which the globe was cut. One was implanted on the internal, and the other on the external part of the iris membrane. As there was but very little pain, and but a slight degree of inflammatory reaction, the patient refused to have the lashes removed. The author was therefore forced to content himself with an antiphlogistic course of treatment. By this means the eye soon became quiet. Ten months later inflammation commenced, and the patient returned with the request that the

cilia be removed. There was considerable pericorneal injection, and there was a small white spot in the cornea at the original point of entry of the lashes. The cilia were found encysted and resting on the iris to which they adhered. Their removal was attended without any great difficulty, except that it was impossible to take away all of the exudate which surrounded one of them. The eye healed rapidly and there were not any bad after-effects.

### **Three Cases of Hereditary Retro-Bulbar Optic Neuritis in One Family.**

STREZEMINSKI, Wilne. (*Annales d'Oculistique*. February, 1899.) The subjects examined by the author were a Russian priest, his mother and a younger brother. All of the patients presented well marked symptoms of the disease. There were three other brothers who were also troubled with feebleness of vision. One of these was an epileptic and the other was insane. The maternal grandmother suffered from the same symptoms. Two sisters of the priest were healthy. Both the brothers had children who were healthy, but as the disease had not declared itself in any of the members of the family before the age of from twenty to twenty-five years, none of the children who were not over fifteen years of age were apparently affected. After describing his own cases, the author gives a careful review of the various theories offered by different writers on the subject.

### **Operative Treatment of Myopia.**

ROGMAN, Gand. (*Annales d'Oculistique*, January, 1899.) Rogman publishes a very complete history of each of his twenty-one cases of high myopia treated by operative measures. The ages of the patients ranged from fourteen to sixty-five years, about twenty years being the average. A few of the eyes showed a healthy fundus, but in the great majority of the cases there was a more or less involvement of the choroid. The degree of the myopia varied from fourteen diopters with astigmatism, to thirty diopters. The difference in the refraction of the eye before and after operation varied from sixteen to twenty-six diopters, nineteen or twenty diopters being the average; this ratio

however only being approximative. In most of the cases but two operations were necessary; a preparatory discission and an extraction. In six instances only was a supplementary discission found to be necessary. In one case, alone was the hyaloid membrane wounded. One eye was lost nine months after the operation through retinal detachment. This detachment the author attributes to the operation in spite of the fact that many other operators have associated similar conditions with the previously diseased state of the eye. This was the only accident he has had to record. There were no instances of infection.

With but one exception the vision was better without glasses after the operation than it was with glasses before. Also, with but one exception, the vision with glasses after the operation was double the amount that had been recorded before. In regard to the curative action exercised by the operation on the diseased portions of the eye, the author is doubtful.

He operated on only one eye except in the case of a woman who was so well satisfied with the first result that she demanded a second interference.

The preparatory discission was made as large as possible, and by means of a Bowman's needle and without a preliminary iridectomy. Precaution was taken to avoid displacing the lens or to wound the posterior capsule. An effort was always taken to preserve the aqueous humor in the chamber. The iris was always widely dilated with atropin.

After a period from four to fourteen days, the author proceeded to the second stage. This consisted in the removal of the disintegrated mass of lens-substance by means of a Teale's suction apparatus. In one case a discission became necessary.

#### **The Danger of Specific Treatment in Tabetic Atrophy of the Optic Nerves.**

DE WECKER, Paris. (*Annales d'Oculistique*, February, 1899.) Nearly ten years ago, when De Wecker published his Treatise on the Eye, he declared himself as being opposed to specific treatment in cases of the tabetic form of optic atrophy. He then held that this plan of treatment was not only valueless but that it was worse than useless, as it

hastened the atrophic process. To this opinion he still holds. It is his belief that *tabes dorsalis* is rarely if ever due to syphilis, and that even if such cases do exist, his statement in regard to the therapy is nevertheless true. He also attacks the theories of Fournier and Antonelli, who consider hereditary syphilis to be one of the most frequent causes of strabismus.

**Dilation of the Lachrymal Ducts in the Fetus and New-Born Consecutive to Imperforation of their Lower Portions.  
The Anatomical Conditions which are Favorable to Congenital Dacryocystitis.**

ROCHON-DUVIGNEAUD, Paris. (*Archives d'Ophthalmologie*, February, 1899.) In three out of thirty infants examined by this author, the lachrymal duct was found to be dilated by a plug which filled it. In one case the dilatation was bilateral. In the others the left side was the one that was affected. This was apparently due to the inferior meatus. In some instances the dilatation was sufficient to displace the inferior turbinate.

These observations have led the author to believe that the projections from the lining membrane into the lumen of the canal are in the nature of valves, and are not spiral in form as has been stated by Hyrtl. The lower meatus is closed by two of these diaphragms situated close to one another. It is the lower of these that the author styles the operculum. The contents of the ducts are either in part or altogether composed of a cellular mass which contains many leucocytes.

The influence of this mass on the formation of congenital dacryocystitis is easily seen. In many of these cases a single dilatation by means of a probe should be sufficient to empty the duct and to cure the disease. The question naturally arises, "Why do not the ducts empty themselves through the canaliculi?" The answer to this the author states, lies in the smallness of the opening from the canaliculus into the duct with the dense consistency of the plug.

**Aqueous Collyria of Salicylate of Sodium.**

ULRY E. and FREZALS, M., Bordeaux. (*Archives d'Ophthalmologie*, February, 1899.) This paper is the outcome of

a continuation of the experiments of the same authors, an account of which appears in this number of the *Annales*. The results obtained in their laboratory researches indicate that by this means a much larger amount of the drug may be made to penetrate the eye and thus reach the vitreous humor than by the method of ingestion. The clinical application of the procedure has so far been limited to a very few cases, but is, on the whole, quite encouraging.

#### **Nature and Treatment of Glaucoma.**

ABADIE, CH., Paris. (*Archives d'Ophthalmologie*, February, 1899.) Abadie again champions his vaso-dilatation theory in regard to the etiology of glaucoma. He says that the fact that even total removal of the iris does not cure many cases of glaucoma, is to him a strong argument against the belief that glaucoma is caused by a retraction of the iris-tissue, thus closing the excretory passages. Another argument in favor of his idea he states. is that an iridectomy performed upon an glaucomatous eye frequently provokes a temporary attack of the disease in the other hitherto sound eye. As in his former papers he recommends the extirpation of the superior cervical ganglion for the cure of the simple chronic form of the disease.

#### **Actinomyces of the Conjunctiva.**

DEMICHERI, Monteviedo. (*Archives d'Ophthalmologie*, February, 1899.) The patient mentioned by Demicheri consulted him in regard to an attack of sub-acute bilateral conjunctivitis. On everting the upper lids the right one presented nothing abnormal, but beneath the left were found several elevated points, each of which was of yellowish-gray color in tint. These were situated along the upper border of the tarsus, almost at the limit of the cul-de-sac. For the most part they were from one-tenth to three-tenths of a millimeter in diameter, although some were larger. A microscopical examination of these areas confirmed the diagnosis of actinomyces. Their removal, they being subconjunctival, effected a cure.

#### **Treatment of Eczema of the Eyelids.**

TROUSSEAU, Paris. (*Archives d'Ophthalmologie*, February, 1899.) Trousseau, while pointing out the necessity

of constitutional treatment in such cases, devotes himself in this paper to a minute description of the varieties of local treatment which have proven to be the most efficacious in his hands; their choice being based on the principle of non-irritating antiseptics. For this purpose he divides the disease as clinically seen into three groups:

- (a) Eczema of medium intensity.
- (b.) Acute or irritable eczema.
- (c.) Chronic or torpid eczema.

(a.) For this type he proceeds as follows. After gently cleansing the lids and the cilia the patient is to apply, morning and evening, luke-warm compresses of a one to ten-thousand strength solution of cyanide of mercury. If there is an associated conjunctivitis this must be cured, and for this purpose the eyes should be washed with the same character of solution as that which has been used for the compresses. This treatment alone is usually sufficient to effect a cure, and should be continued persistently and without interruption. Should the healing process be retarded for a long period of time, an ointment may be tried, provided that there is not any ulceration or much irritation. The author finds that fresh lard makes the best ointment to commence with. Should this be well borne, it may be replaced by an ointment that is composed of either oxide of zinc or yellow oxide of mercury; these to be mixed with vaseline in the proportion of one to forty. These may be applied at evening during which time the compresses are to be discontinued.

(b.) In this form three indications arise: 1. To lessen the irritation of the skin. 2. To cure the ulcerations; and 3. To combat any distressing symptoms.

1. Strong antiseptics cannot be used at all, luke-warm water being sufficient for cleansing purposes. In the morning the lids should be cleansed with tepid water, and at night a cataplasm should be applied. When the irritability has about disappeared, luke-warm compresses soaked in solutions of boric acid or of bicarbonate of soda may be employed morning and evening for about twenty minutes at a time each. After these solutions have been used for several days' time with no bad effects, cyanide of mercury may be substituted.

2. The best remedy for the ulcers is to touch them daily with a two per cent. strength solution of nitrate of silver; or else the surfaces may be dusted at bedtime with a powder that is composed of talc, salicylate of bismuth or bicarbonate of soda mixed with prepared chalk. To apply this, the patient should place a thin strip of absorbent cotton along the edges of the lids, dust the powder on, and not open the eyes again until the next morning.

3. The photophobia disappears, usually, with the catarrh. Itching is, at times, a very serious feature of this type of cases. The patient must be prevented from scratching the eyelids, even if it becomes necessary to tie his hands. The lids should be touched with nitrate of silver or should be cleansed with lotions of bicarbonate of soda or weak alcohol. Spraying the parts with carbolized water in association with the powdering is useful at night. When the disease has been brought under control it should be treated as described in paragraph (a).

(c.) The parts affected in the chronic forms of the disease should be stimulated. In these types, compresses of cyanide of mercury are to be applied in the morning, half an hour at a time, and an ointment containing yellow oxide of mercury, resorcin or carbolic acid (the two latter in cases in which there is much itching) or lanoline and oil of cade with vaseline as a base are to be used at bedtime. Due attention should be paid to the lachrymal passages.

**On the Extraction of Cataract in Cases of Keratecenus.**

TERSON, ALBERT, Paris. (*Archives d'Ophtalmologie*, February, 1899.) After the removal of the cataract in Terson's case, the patient considered that her vision was about what it had been before the appearance of that trouble, the cornea apparently remaining about as before. The author considers that in bilateral cases of conical cornea, after operative failure on the organ itself and inability to get any useful results from ordinary optical procedures, the removal of the lens of one side is a justifiable procedure.

**Traumatic Lesion of a Valvule of the Aorta Followed by Embolus of the Central Artery of the Retina of one Eye; with Remarks upon Ruptures of the Valvulae of the Heart.**

OSTWALT, Paris. (*Recueil d'Ophtalmologie*, February, 1899.) Ostwalt reports the case of an old man with marked



sclerosis who had never suffered from rheumatism or from either palpitation or organic lesion of the heart, in whom a violent effort produced an inguinal hernia and a lesion, in all probability which consisted in a rupture of one or more of the valvules of the aortic opening. The day following the accident he noticed failure of vision in the right eye. When he presented himself for a consultation a few days later the author diagnosed an embolus of the central artery of the retina. It was only during the search for the cause of the ocular lesion that the other troubles were discovered as there had been so few subjective symptoms that the patient's attention had not been attracted to them.

#### **The Treatment of Macular Choroiditis.**

DARIER, Paris. (*La Clinique Ophtalmologique*, March 10, 1899.) Darier again calls the attention of the profession to the good results that he has obtained in the treatment of macular choroiditis by sub-conjunctival injections of cyanide of mercury. He believes that better results are obtained by injecting large amounts of weak solutions than by the smaller amounts of the classical one of one to one-thousand per cent. strength solution. For this reason he employs a one to five thousand strength solution of the cyanide in a one to fifty per cent. strength salt solution.

#### **The Forms of Keratitis. and the Yellow Ointment of Pagenstecher.**

BAUDOIN, Castres. (*La Clinique Ophtalmologique*, March 10, 1899.) The author employs the ointment of the yellow oxide of mercury in the strength of one part in nine. This application he makes in his office, not trusting it to the patient. One or two drops of a one to forty per cent. strength solution of cocain are instilled into the conjunctival sac before applying the ointment, after which the eye is gently massaged through the lids. The excess of ointment must then be washed from the eye. To do this properly the lids are first cleansed with moist cotton, after which luke warm water is used. The depression formed by the internal angle of the eye is filled with water



and the eyelids are alternately opened and shut. This maneuver is to be repeated until the water comes away clear. At the same time the patient should be instructed how to roll the eye up and down. If the patient be a young child or if he be very ignorant the same object may be accomplished by rubbing the lids gently over the globe. This being completed, the lids can be turned and any remaining ointment removed. If there be much conjunctival secretion the operation may be completed by touching the lids with a two per cent. solution of nitrate of silver.

This procedure should be repeated daily when by the second or third day rapid amelioration should commence. Should there be no improvement at the end of six or eight days time there probably has been some error in diagnosis. If so, the treatment should be stopped. Especially is this the case if the eye should become worse. The types of corneal disease in which this form of treatment has proven to be the most useful are the following: perikeratitis, marginal vesicular keratitis, keratitis in bands, central vesicular keratitis, marginal and central pustular keratitis, in which last type the treatment should not be commenced until several fine vessels have appeared and in which complementary treatment is required for the conjunctival lesions and certain forms of pannus.

**Apropos of the Pathogeny of Simple Chronic Glaucoma.  
A Glaucomatous Family.**

ROGMAN, GAND. (*La Clinique Ophtalmologique*, April, 1899.) The first record of a case of glaucoma in this family was that seen in the grandmother. This was of the fulminant type. The second case was that of the mother who was subjected to an acute attack of the condition at the age of 62. She had ten children living (seven sons and three daughters). At the time of writing of the article three of the sons had been afflicted with the disease which manifested itself in the prodromic form, becoming inflammatory in one case and being associated with an acute exacerbation in another. In but two of four members of the family who were under the author's care, was it possible to demonstrate an excavation in the nerve-head. All of these cases yielded to iridectomy and miotics. In

one case a sclerotomy proved ineffectual. In each generation the disease appeared at an earlier age than in the preceding one.

**Rudimentary Stigmata of Hereditary Syphilis.**

ALFIERI, Turin. (*Receuil d'Ophtalmologie*, March, 1899.) This author finds very much the same changes as those that have been described by Antonelli, i. e., pigmented zones surrounding the papilla shading off into a slate colored area, effacement of the vessels, albinism, pale spots in the retina, etc.

**Iritis of Nasal Origin.**

LEFRANCOIS, Cherbourg. (*Recueil d'Ophtalmologie*, March, 1899.) Lefrancois reports the case of a young married woman suffering from iritis and keratitis with descemetitis. For five months previous the attack she had not menstruated although she was not pregnant. Vaginal examination revealed slight leucorrhea that was due to cataract of the neck of the uterus. Two months later she again consulted the author. Menstruation was well established and the leucorrhea had diminished greatly but the condition of the eye was worse, pain having become a prominent feature for the first time two days before this visit. At this time the patient stated that there was a foul smelling muco-purulent blood-stained material which was discharged from the nose. This was removed, but no foreign body could be detected. Recovery of the eye commenced immediately and in about a month's time it was practically accomplished, vision being reduced to but one-half. When seen three months later vision had become normal. The author regards the uterine trouble as the predisposing cause and the nasal condition as the exciting one.

**A Precise Indication for the Extraction of Soft Cataract by the Aspiration Method.**

TERSON (père), Toulouse. (*Annales d'Oculistique*, March, 1899.) Terson has employed this method most successfully in the case of a young boy who had developed a traumatic cataract following a blow on the eyeball. The cataract was soft and a trembling of the iris indicated that the lens was luxated. He concluded

from the result obtained in his case that in traumatic cataract in young subjects and accompanied by moderate degrees of sub-luxation of the lens, aspiration carefully performed is the operation of choice.

**On Particular Form of Corneal Infection of the Serpiginous Type.**

PETIT, P. (*Annales d'Oculistique*, March, 1899.) The summing up of this paper as given by the author is as follows:

There exists a particular form of corneal infection that is characterized clinically by a superficial ulceration of serpiginous type, this being accompanied by hypopion without any very active participation of the iris in the inflammatory reaction (absence of synechia). The evolution of this form of keratitis is painless being, unaccompanied by any of the symptoms of the serpiginous types of ulcer that are due to the pneumo-coccus.

This form of infection is distinguished from the serpiginous variety that is due to the pneumo-coccus by less irritating prodromata. After healing there remains in the position that has been occupied by the ulcer, a leucoma of greater or less depth and which alters the vision to a notable degree.

In the two cases studied by him the affection developed without any apparent immediate cause, the condition being noted in patients suffering from atresia of the lachrymal canals.

This affection of the cornea appears to be caused by the proliferation in the superficial layers of the cornea of a bacillus presenting morphologically certain analogies with the diplo-bacillus of sub-acute conjunctivitis, but differing from it in its characteristic culture and life history. This bacillus does not take the Gram stain. It is cultivated on ordinary media and those to which serum has been added. It liquefies gelatine; also coagulated beef-serum. It is not pathogenic in animals.

**Tattooing of the Cornea and Sympathetic Ophthalmia.**

A. TROUSSEAU. (*Annales d'Oculistique*, March, 1899.) Trousseau adds one more to the already fairly large list of

accidents following tatooing of the cornea. While he does not absolutely discard the operation, he advises conservation in regard to it, and above all, he believes that it is necessary to preserve as rigid an asepsis as possible. He holds that the operation should be performed only in those cases in which great betterment of vision or else a greater facility to the patient in finding a means of livelihood can be promised. In the case reported, the patient submitted to the operation at the hands of another surgeon for the purpose of hiding an adherent leucoma, sympathetic ophthalmia set in, and the patient became blind.

**Ocular Hemorrhages. Spontaneous Conjunctival Hemorrhage.**

SALVA, Grenoble. (*Annals d'Oculistique* March, 1899.) Salva had under his care a girl of seventeen years of age who became the subject of spontaneous conjunctival hemorrhages. She did not suffer from any organic lesion whatever, menstruating regularly and normally. The blood came from no particular spot but seemed to filter through the entire face of the conjunctiva. Several cauterizations with a ten per cent. solution of protargol, repeated three times a day, resulted in a cure after other measures had failed. Altogether the hemorrhages had persisted for a period of two years, during the latter part of which time they had occurred at times as frequently as every hour or two, and at night as well as by day. The author regarded them as hysterical manifestations; many other symptoms of this trouble being present. He is at a loss, however, to decide whether the cure should have been ascribed to suggestion which failed with other methods of treatment or to some change in the membrane that was produced by the protargol.

**The Role of the Cornea in the Absorption of Collyria.**

ULRY AND FREZALS, Bordeaux. (*Archives d'Ophthalmologie*, March, 1899.)

1. Aqueous collyria placed on the surface of the eyeball penetrate into the anterior chamber by way of the cornea. They do not pass into the aqueous humor through the conjunctiva except in infinitesimal quantities.

2. In the absorption of aqueous collyria the cornea acts as a series of super-imposed membranes of varying permeability.

3. The cornea does not absorb fatty materials. If active substances in the form of either ointments or oily collyria are placed into the conjunctival cul-de-sac, they are first dissolved by the tears and are then absorbed.

**Metastatic Ophthalmia Followed by Death.**

**TERRIEN.** (*Archives d'Ophthalmologie*, March, 1899.) The primary infection was from a small uterine tumor. After several days of acute febrile symptoms the right knee commenced to show signs of abscess-formation. The following day the conjunctiva of the right eye became injected and the eye was inflamed. By the following day the eye presented well-marked symptoms of panophthalmitis. The right eye was normal. Leeches, atropine and hot compresses were ordered. About four weeks later the patient died. The right knee, the uterus, the right eye, the lungs, the spleen, the liver, and the kidneys all showed more or less involvement. The aqueous humor contained numerous colonies of streptococci. There were no signs whatever of meningitis or of any trouble in the brain. The layers of the retina were indistinguishable, the rods and the cones having almost completely disappeared, and the whole organ was infiltrated with leucocytes. There was great destruction of the myeline of the optic nerve, particularly on the nasal side. The neural lesions, although of less intensity, were of the same character on the left side as on the right. The necrosed fibres could be traced distinctly, running from the right eye through the optic chiasm to the left eye.

**Fracture of the Orbital Vault with Contusion of the Globe with Intra-Orbital Traumatic Adhesions of the Levator Palpebrae and the Superior Rectus Muscles.**

**COPPEZ, Brussels.** (*Archives d'Ophthalmologie*, March, 1899.) The lesion was caused by a large piece of iron, which struck the left supra-orbital arch. When the author saw the patient a week later the left upper lid was swollen, and the eyelids did not open well when the patient was instructed to look up. The movements of the eye were very

much restricted. They were very much limited upwards though none whatever downwards. It was difficult to move the eyes toward the temporal side, but they could be moved very well towards the nasal side. There were numerous hemorrhages from the retinal vessels.

The symptoms seemed to indicate that a piece of the steel had broken off and had penetrated the orbit; that this was incorrect, however, was proven by skiagraphy. The vault of the orbit was found to be fractured. Visual acuity was reduced to one-eighth of normal. Under sudorific treatment the hemorrhages were absorbed and the acuity of vision rose to one-fourth of normal. With the disappearances of the hemorrhages a horse-shoe shaped rupture of the choroid could be determined. This extended from under the macula beneath to the nasal side of, and over the optic nerve head. When at rest the lid regained its normal appearance. External rotation was perfect. Superior rotation was impossible, the lid refusing to rise during the effort. Inferior rotation was also unobtainable. The eye was cocainised and an ineffectual attempt was made to rotate the globe downwards by means of a forceps. The trouble was revealed. Instead of the muscle being paralytic it was found to be bound by adhesions existing between the levator palpebræ and the superior rectus muscles on the one hand and the cellular tissue and the periosteum on the other. At the time of writing the patient had gained perceptible power for superior and inferior rotation.

## ABSTRACTS FROM RECENT SPANISH AND PORTUGUESE OPHTHALMIC LITERATURE.

BY A. B. HALE, M. D.,

CHICAGO.

### **Nervous Blindness.**

RAMOS, J. (*Gazeta Medica de Mexico*, January 1, 1899,) has a note on *Nervous Blindness*, premising his paper by saying that pathology and principles do not always lead to diagnosis, and that occasionally a unique case presents which must be classed by itself. Nervous blindness may be called hysterical in most instances and there must be some plain explanation when we can find it. In the author's case there was no history of hysteria, nor any exciting cause. The patient was a young woman 20 years of age; with no bad ancestry or habits. One morning at her usual occupation (sewing) she noticed that she had suddenly grown blind in both eyes. Next day on examination she was calm, but still blind; pupils dilated; fundus healthy. No other symptoms. Two days afterward, patient counted fingers; in four days  $V=O.1$ ; in 15 days she was cured.

### **Spontaneous Luxation of Cataract.**

DR. RAMOS, J. (*Gazeta Medica de Mexico*, February 10, 1899,) contains a report of a case of spontaneous recovery (Luxation) from cataract, the only one he has known since he saw a case in Galezowski's clinic in Paris; this case was in a patient who refused operation for ripe cataract, but prayed to the Virgin (of Paris), when, after several prostrations before the altar he was cured! Afterward there developed irido-choroiditis which finally demanded enucleation, when the lens was found in the vitreous. The case of Ramos was somewhat similar. This was a priest of 58 years, with myopia of 14 D, and a ripe cataract O.S. He prayed to the virgin for relief, bowed several times to her altar and was suddenly cured.

SANTOS FERNANDEZ, (*Cronica Medico-Quirurgica de la Habana*, No. 4, February, 1899,) adds to these cases by reporting an example in the practice of Dr. Gonzalez, where a priest with cataract fell down stairs and recovered his sight! Another priest, also with cataract, hearing of this, gave himself several severe blows on the head, but failed to recover! Fernandez also had a case of his own, a woman one day showed in his clinic with a cataract. The second day afterward, she returned with the statement that she had meanwhile had a blow against a table, and thereby recovered her sight. For four months vision was good, but suddenly failed again. Here the lens had luxated into the anterior chamber. Fernandez pushed it back again into the vitreous and restored sight. The lens was seen lying near the disc. In 1881, he operated on a woman for cataractous lens O.S. During recovery O.D. was found opaque, but suddenly cleared up again. The patient declared that there had been no operation, but that vision had returned after a fall.

#### Post Operative Mania.

DEL CASTILLO, DR. D. (*El Siglo Medico de Madrid*, No. 2355, 12 Feby. 1899,) reports two cases of Post-Operative mania. A man 60 years, operation (cataract) successful, and when bandage was removed, 48 hours afterward everything was normal. Four hours afterward, there was suddenly developed great mania, which nothing but chloral stopped. This lasted a week, but ended in recovery. The second case was a man of 58; operated on without iridectomy, discharged successful, wearing glasses. Some time afterward the other eye was operated on, this time with iridectomy. Bandage removed at 48 hours, everything normal; four hours afterward acute mania developed, to be cured in four days. In neither case did Castillo think atropin accountable for the condition.

#### Effect of Strong Electric Light on Vision.

SANTOS, FERNANDEZ. (*Cronica Medico-Quirurgica de la Habana*, No. 2, Jan'y., 1899,) discusses loss of vision due to electricity, and describes three causes. (1.) The current itself, (2.) Burns. (3.) Light. He reports a case



due to the last cause, the results of which were about the same as those due to intense light, as when studying an eclipse without proper precautions. The patient, robust but nervous, with 5 D of myopia, was suddenly exposed to intense electric light on August 22, '96. He was a telegraph operator and during a thunder storm he attempted to put away his instrument when a flash struck it while he was one and a half meters away. When seen five days afterward, the lids were edematous, conjunctiva injected, cornea hazy, aqueous turbid, pupil immobile, lens opaque, light perception only, and tension raised. Iris did not respond to mydriatic. 40 days afterward the pain was gone, but  $V=0$ . His thesis is that this was all due to the intense light, for if the electric current had played any part, he thinks there would have been some retinal changes visible to the ophthalmoscope.

#### **Presbyopic Hyperopia.**

SANTOS, FERNANDEZ. (*Anales de Optalmalogia*, No. 8, Feb'y. 1899,) discusses Senile Hypermetropia, and concludes that in Cuba (tropical countries generally) it appears earlier than in colder climates. He finds too, that it cannot always be corrected so as to bring vision to  $\frac{1}{2}$ . He thinks not enough stress has been laid on this condition and wishes to add to the classical divisions—Hy. manifest, latent, absolute—another Hypermetropia Presbyopica.

#### **Pollopla Hysterica.**

WERNICKE, OTTO. (Buenos Aires,) in (*Anales de Optalmalogia*, No. 9, March, 1899,) reports a case of Poliopia Hysterica. Mrs. X., 43, mother of four boys, had a nervous history, and several attacks of hysteria. After a long period of hard labor she became exhausted mentally and physically. For some months back she had had cloudy vision. On examination anemic  $V=\frac{1}{2}$  with + 1.0 D. By Graefe's (prism test) sees three images, that is diplopia monoculoris in O.D., and no change of distance alters relation of images. Visual field about normal, but diplopia only in its center. This diplopia is almost always hysterical, when not due to some luxation or abnormality of lens. Wernicke accepts none of the theories of poliopia, but thinks each factor in hysteria adds to the general cause.

ABSTRACTS FROM CURRENT AMERICAN AND  
ENGLISH OPHTHALMOLOGICAL  
LITERATURE.

BY CHARLES H. MAY, M. D.,

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**Extirpation of the Lacrymal Sac and Gland.**

HOLMES, C. R. M. D., Cincinnati, O. (*Archives of Ophthalmology*, January, 1899.)

Although advocating extirpation of the lacrymal sac and gland in suitable cases, the author is a firm believer in milder means so long as they will accomplish a cure within reasonable time without too much suffering on the part of the patient. He gives a brief history of these operations, the names of operators identified with them and the opinions of modern authors concerning them, and says the operation upon the sac has slowly gained adherents, while the removal of the lacrymal gland was practically abandoned. The latter fact he attributes to too incomplete removal and to failures from suppuration in the days before aseptic surgery. "I believe we may safely state that with strict attention to asepsis, the dangers from infection can now be entirely eliminated and the results, both immediate and remote, are so highly satisfactory that I can see no reason why the operation should not be resorted to in all suitable cases."

The following are considered the indications for the removal of the tear sac and gland:

1st. In cases where it becomes necessary to operate upon the globe, as for cataract or glaucoma, especially so, should there not be sufficient time to carry out other methods of treatment.

2d. In patients who cannot devote the time, or who may be unable to endure the treatment, by probing.

3d. In all cases where conservative treatment has failed to cure within a reasonable time. The writer describes fully the operation of extirpation of the sac and canals; he ad-

vises washing out the sac and the nose, the invariable use of an anesthetic and strictest attention to asepsis. In some cases he injected warm starch colored with iodine into the sac before extirpation; he always tries to avoid cutting into it. With careful dissection and the use of a blunt hook made for this purpose he usually succeeds in freeing the sac without dividing the tendo oculi. After the sac is extirpated he cures the bony canal and destroys the canaliculi by splitting and cautery.

In extirpating the lacrymal gland the writer formerly made the incision in the outer part of the shaved eyebrow, but now he proposes to cut along the bony margin of the orbit, beginning from the center of the upper arch to a point 3 mm. below the outer canthus. The septum orbitale is cut through at its attachment to the orbital margin. It is important not to confuse the orbital fat with the gland and not to disturb the orbital contents unnecessarily. The relation of the anterior edge of the gland to the bony margin varies. Sometimes it presents one to two mm. below, but usually it lies two to three mm. upward and backward from the bony orbit. By means of a slender, blunt-pointed pair of scissors, broad ocular fixation forceps, small abscess knife, and a pair of tenotomy hooks, one can, with some patience, dissect out the gland with but little change in its shape. In addition, a part or all of the secondary gland may be removed, but perforation of the conjunctiva should be avoided. Hemorrhage is not severe. The wound is closed by two deep and three or four superficial silk sutures. The dressing is not disturbed for three or four days.

Dr. Holmes reports fourteen cases in which removal of one or both lacrymal sacs and glands were performed. "The ages of the patients ranged from five to eighty-four years. As to sex, six were males, eight were females. In three cases there was double extirpation. Counting each side as one operation, we find 17 operations, 7 times upon the right, 10 times upon the left. There was primary union over the sac 16 times. Wound over sac healing by granulation once. There were 13 extirpations of the lacrymal gland, with primary union in every case."

The good results obtained immediately after operation were lasting. He followed up all the cases but one for

months and years. In the cases where both sac and gland were removed the patients were freed from their complaints. In two cases the sac only was removed, and these patients continue to suffer from epiphora.

The writer gives a table of measurements he has made upon 50 anatomical specimens, showing the relation of the outlet of the nasal duct to the lower edge of the inferior turbinated, the floor of the nose, and the entrance to the nares.

#### **The Radical Treatment of Chronic Dacryocystitis.**

WILLIAMS, EDWARD R. M.D., Boston. (*Boston Med. and Sur. Journal*, February 23, 1899.) The writer describes the method of excision of the lacrymal sac seen by him during his stay in Germany. After briefly enumerating the causes and symptoms of dacryocystitis he gives the indications for this radical method and the technique of the operation as follows:

“The operation, first performed by Platner (Leipzig) in 1724, was also used by von Graefe in 1879–1881, in about forty cases. He recommends the operation in (1) all cases of obstinate dacryocystitis with stenosis of the nasal duct, where the sac is protuberant and thickened. Such patients could be probed, and often are, but the treatment lasts too long; (2) in cases of fistula, where the skin has been attached to the tearsac by cicatrices due to frequent phlegmonous inflammations, and in chronic catarrhal cases due to polypi, where the nasal duct still remains open. Rehr says the operation is indicated for all cases of dacryocystitis except an acute inflammation arising from an external infection. If such an inflammation arose without any previous epiphora or purulent discharge, it will cure itself. The advantages of an extirpation over the obliteration operation by the electro-cautery are: (1) It lasts only twenty minutes on the average, and is without danger to the patient; (2) by using a five-per-cent solution of cocain hydrochlorate it is nearly painless, and patients are more willing to undergo the operation than under chloroform; (3) healing, almost always *per primam*, is completed so that patients can leave hospital in ten days on the average; (4) the curved incision of Voelckers is an

improvement over the older straight one, because it avoids ectropion, which was formerly the frequent result of this operation; (5) this method is advantageously employed in chronic catarrhal cases which ordinarily are probed; (6) the epiphora stops entirely when the person is indoors, and may trouble him only very slightly when exposed to wind, dust, smoke, etc.; (7) the possibility of corneal infection is avoided when the source of trouble is removed, which is of especial importance when only one eye is useful.

The operation as performed by Voelckers consists first, in the subcutaneous injection of the five-per-cent. solution of cocain over the tear-sac. The patient being laid on a low bed the incision is begun just below the eyebrow, at a point exactly over the canaliculus. The knife is now carried in a curve onto the nose, and finally ends the cut at a point on the cheek, exactly opposite the starting point. The distance from the cut on the nose to the canthus is eight to ten millimetres. The incision being made through to the bone, the inner edge of the tear-sac is generally seen at once. The sac is then separated from the surrounding tissue by means of an elevator, and from the malar bone by pushing the elevator well under the sac and making one or two upward prying movements. The skin can be now dissected away from the front surface of the tear-sac. Up to this point the operation is generally quite bloodless if properly managed. The surgeon next grasps the entire sac with strong fixation forceps and raises it with his left hand, while with his other hand he divides the sac as it passes down into the nasal duct. The points of the scissors must be pushed as far as possible into the body canal in order to include as much sac as possible. The hemorrhage is now generally profuse, but can ordinarily be controlled by pressure in a few minutes. The sac being freed from surrounding parts wherever necessary, the bony nasal canal must be carefully inspected, and if all its contents (excepting periosteum) are not removed, as may be the case where the tissues are brittle, they must be curetted out at once. After thorough disinfection the wound is closed by three or four deep sutures. The average duration of this operation is twenty minutes. If necrosis of malar or nasal bones is found a broad com-

munication into the nose will allow the external wound to heal *per primam*."

**Protargol and Argenin in the Treatment of the Purulent Ophthalmia of Infants.**

PECK, EDWARD S., M. D., New York. (*Medical News*, January 21, 1899.)

The writer speaks of the various agents which have been introduced from time to time to replace nitrate of silver and points out that all of these have been unsuccessful in accomplishing what silver nitrate has, viz: to eradicate the gonococcus. He emphasizes the following points in connection with protargol and argenin, in so far as they seemed to him to be superior to silver nitrate: (1) the quicker destruction of the gonococcus; (2) the earlier disappearance of secretion and inflammatory process; (3) the resolution of the injured corneal and conjunctival tissues.

He gives a brief review of the chemical properties of these two agents. "Each is described as a silver proteid compound, solutions of which cannot be precipitated by sodium chlorid, or by albuminous fluid. Protargol contains 8.3 per cent. of silver; it is a yellowish powder, readily soluble in cold as well as hot water, forming a clear solution. It keeps well in powder form and in solution. Argenin contains 4.2 per cent. of silver. It is also a powder, fine, white, readily soluble in water by gently warming, but its solution is turbid. Argenin decomposes if exposed to too much heat in the preparation of solutions, and when decomposed it is very irritating. It is said not to keep well in solution, even in dark-colored bottles. In this connection it should be noted that silver nitrate contains 6.35 per cent. of silver."

The writer quotes the conclusions of a clinician (name not given) who used 2 per cent. solutions of argenin: "First, both experimental and clinical investigations have shown that argenin kills the gonococci in a short time, notwithstanding its lack of albumin-coagulating power. Second, even in solutions stronger than 2 per cent. it has hardly any tendency to set up inflammation and it has no caustic properties." Dr. Peck says that protargol is more painful, and does not require solutions stronger than one-

half to 2 per cent.; it is more promptly germicidal, and it is less likely to irritate. He thinks that the germicidal superiority of protargol over either argonin or silver nitrate commends it, especially in ophthalmia neonatorum. In some of the cases observed the gonococcus disappeared as early as two weeks, in none later than four weeks, the average persistence of the germ under silver nitrate treatment being five weeks. In the limited observations made by the writer there was less ulceration of the cornea, and less cicatrization of the conjunctiva than with silver nitrate and pain and reaction were also much less.

He describes the process of making solutions of argonin readily and rapidly, as given by Miehle: "Ten parts of cold water are first introduced into a flask and then one part of argonin. The whole is then vigorously shaken until a uniform mixture is had, when sufficient boiling water to make up the desired quantity of solution is added, the whole being frequently shaken until complete solution occurs, when the mixture is strained through a piece of gauze." The most effective solution of argonin for clinical work is 3 per cent. To prepare solutions of protargol the powder is stirred with some water, with or without a little glycerine, into a paste, and then diluted by adding the necessary quantity of cold or luke-warm water. Solutions of 0.25 to 2 per cent. are generally employed.

Regarding the manner, in which these solutions were employed, he says: "The protargol solution, at first 5 to 10 per cent., should be carried rather forcibly over the eyeball, and into the folds of the conjunctival sacs by means of a large pipette; it should at first be used from 4 to 6 times a day. As soon as the secretion lessens in amount, or becomes shreddy, while its fluid part becomes thinner, the protargol solution may be brought down to 2 per cent., and may be used less frequently. A successful result of such treatment would be a limitation of the disease to three, possibly, two, weeks. Examinations for gonococci should be made every second day, and an eye should not be regarded as safe, or as amenable to contact with its mother, until a full week has elapsed, in which absolutely no gonococci are found under the microscope."

The writer gives the histories of a number of cases of ophthalmia neonatorum and also of gonorrheal ophthalmia



in the adult to illustrate the advantage to be derived from the use of protargol. The results showed that the duration of the disease was shortened and the sight of the affected eye did not suffer more than when other methods were employed. Speaking of gonorrheal ophthalmia, he says: "In the earliest cases the protargol powder was dusted into the eye 3 times each day and allowed to remain 15 minutes. This was soon changed to twice each day, but as the inflammatory reaction was marked and the patients complained of severe pain, a 50 per cent. solution was substituted, being applied two or three times a day and allowed to remain in the eye 3 minutes." Later, a 5 per cent. solution was used and allowed to remain in the eye 15 minutes. This last solution has proved to be the most satisfactory."

#### **Note on the Operative Treatment of Ectropion.**

MACTIER, CARTER, H., B. A., M. B., B. Ch., Dublin. (*The Lancet*, February 4, 1899.) The writer describes a new method of operation in cases of ectropion, as follows: "A Jäger's bone plate lid-holder being placed in the conjunctival sac and being held in position by an assistant I made a curved incision with the concavity upward parallel to and about two centimeters below the free border of the lid, the incision being about three centimeters in length. I then carefully dissected in an upward direction through the tissues, keeping posterior to the tarsal cartilage, until the conjunctival sac was exposed and freed from attachments except at its junction with the edge of the skin at the margin of the lid. The lid-holder greatly facilitated this part of the procedure. All hemorrhage being stopped with pressure, a fine silk suture was passed after the method of Snellen, the free ends being brought out just below the lower margin of the skin wound, then a double-pointed horse-hair suture was passed from the bottom of the conjunctival sac and the free ends were brought out below those of the silk suture. Both sutures were then drawn tight and tied, the tension exercised being just sufficient to produce a slight amount of entropion and the hair suture holding the bottom of the freed conjunctival sac at the level of the



wound in the skin, the last wound being then sutured with a few points of horsehair. Iodoform powder being dusted on and a Gamigee pad smeared with iodoform ointment (15 grains of iodoform to one ounce of vaseline) placed over both the eye and the skin wound, the whole being secured with a roller bandage. The wound healed by first intention and I removed the sutures on the fifth day, the result being excellent, as the accompanying figure, copied from a photograph which was taken a month after the operation, shows. I must express my regret at not having had the case photographed also when the deformity existed, since a comparison of its condition before and after the operation would have had still more interest for the reader.

The failure of Snellen's method in this case was, I believe, largely due to the fact that when that method was devised suppuration was the rule and asepsis the exception, therefore the suture, by causing a septic tract, produced cicatricial bands which contracted on healing and thus cured the condition; but now when suppuration is almost a thing of the past, the lid simply reverts to its faulty position when the suture is withdrawn. In the operation which I have described above, the conjunctival sac and therefore the palpebral conjunctiva are pulled downward and by healing in at a lower level draw the edge of the lid upward and inward thus producing a cure. The advantages I claim for this method are: (1) That it is applicable to cases where Snellen's method fails. (2) That the scar left by the incision in the skin being in a natural fold is not so apparent as that of Kühnt which is vertical, and (3) that the tarsal cartilage does not require to be cut and the difficulty of bringing the two sides of a V-shaped incision together—a seemingly simple but practically very difficult matter—when doing Kühnt's operation, is therefore avoided.

#### Artificial Eyeballs.

SNELLEN, H., M. D., Utrecht, Holland. (*Ophthalmic Review*, Dec. 1898.) The original prothesis, or artificial eye, was meant to cover an atrophic bulb. It was made, firstly, of enameled metal, and was thin and shell-shaped, in order that it might fit into the narrow space between the eyeball and the

lids. The enamel proved undurable and was replaced by china and afterward by glass, but the shell-shaped form remained even after the operation of enucleation became more freely and variously applied. This operation belongs to a relatively late period. It was performed in 1841, by J. M. Ferrall, in Dublin, and by Bounet in France. Modern ophthalmology soon found many indications for it. Not only tumors and the fear of sympathetic inflammation, but the presence of chalky deposits in atrophic eyes, and cosmetic considerations, where the globe was enlarged, deformed or painful, led to the employment of simple enucleation of the eye.

The shell-shaped prosthesis, though suitable where an atrophied eye remains, does not answer its purpose well after enucleation. The inside of the shell affords a space in which tears and mucus accumulate, and the thin edges are apt to wound the conjunctival sac, causing scars and subsequently granulation tumors.

With the view of increasing the mobility of the prosthesis and also to do away with the cavity behind the shell, various modifications of the operation have been proposed. Mulder, of Gronigen (Holland), performed evisceration of the globe in animals, and showed its possibility on the dead subject. A. Graefe, of Halle, introduced it clinically. In England, evisceration was combined with the introduction of a glass globe into the scleral cavity by Mules, and a similar glass globe was introduced into the hollow of Tenon's capsule by Adams-Frost.

The disadvantages of the glass shells, where simple enucleation had been performed, led me to consider the question whether a different shape of prosthesis would not prove to be an improvement in these cases. In the first instance, I experimented by filling up the ordinary hollow artificial eyes with plaster of Paris, or with the gutta-percha preparation used in dentistry, and known as Gilbert's temporary stopping. The first trial was a decided success. Notwithstanding its greater weight the filled-in eye-shell was preferred by the patient. The removal of the sharp edges and of the cavity proved to be a great advantage. The back of the prosthesis was made either convex or concave, according to the shape of the muscular stump upon which it rested.

the lapse of some time, it is often impossible by means of the methods now employed to state with certainty whether the case before us is one of that disease or not. Can a diagnosis be made with absolute positiveness? Unquestionably yes. If one can find within the secretions or in the contents of the expressed follicles an organism such as I have described, he may with absolute certainty call the disease trachoma; furthermore, he must use every precaution to prevent the patient from infecting others, for that organism, under favorable circumstances, will certainly cause the disease in others, no matter how mild a form of the disease the patient himself may exhibit. Is this method of diagnosis sufficiently reliable—can the organism be found in enough cases to render it valuable? Again, undoubtedly, yes. Where one suspects trachoma there are almost invariably enlarged follicles. Squeeze out one of these follicles, smear its contents on a cover-glass, fix them in the flame, stain them by Gram's method, and if a capsulated diplococcus is present the case is undoubtedly trachoma; if it is not present the case is in all probability not trachoma."

**The Ocular Phenomena Associated with Cheyne-Stokes Respiration.**

WHITEHEAD, ARTHUR L., M.B., B.S., London. (*The Lancet*, February 25, 1899.) The writer reviews the reports of numerous observers of these phenomena, adds the histories of two cases of his own and concludes that:

"Considering all these cases, reported by so many observers, it is evident that the ocular symptoms met with in association with Cheyne-Stokes breathing are of considerable variety, and, moreover, that they may be observed in what we may conveniently call a Cheyne-Stokes state, or condition apart from any disturbance in the rhythm of respiration. Every variety of case may be seen, from simple Cheyne-Stokes breathing to the complete clinical picture of persistent and regular Cheyne-Stokes respiration, accompanied during the pause by unconsciousness, closed eyelids, contracted pupils and lateral conjugate deviation of the eyeballs, the pulse during this period being frequent, small, and of moderately high tension. At

the end of some seconds consciousness returns, the eyes open, the pupils slightly dilate, the pulse loses some of its tension, and a superficial respiration follows. Cases intermediate in character, with one or more of these phenomena associated with the Cheyne-Stokes breathing are recorded, clearly showing that whatever may be the nature of the condition underlying this group of symptoms occurring in the Cheyne-Stokes state, it may produce the effects which depend upon it by affecting the lower centres in the first place and breathing upward to the higher, or by acting upon the higher first, and afterwards invading the lower centres. Further, the cases reported by Bullard and Wentworth, by Gibson and by myself show that the periodic changes produced by alterations in the centres may commence in and be limited to those which are not concerned in vital phenomena."

**Report of a Committee of the Ophthalmological Society of the United Kingdom Appointed In March, 1896, to Consider the Relative Value of Simple Excision of the Eyeball, and the Operations Which have Been Substituted for It.**

*(Trans. of the Ophthalm. Soc. of the United Kingdom, 1898):*

*(Continued from p. 84.)*

*What are the disadvantages of the several operations under consideration, apart from the risks of meningitis and sympathetic inflammation?*

The following disadvantages of simple excision have been suggested:

(I) The deformity which necessitates the wearing of an artificial eye. This is common to all the other operations except optico-ciliary neurotomy and neurectomy.

(II) Defective prominence and imperfect movement of the artificial eye.

(III) The faulty development of the orbit and face on the side from which the eye has been removed, when the operation has been performed in early life. Though often referred to in ophthalmic literature, we have been unable to find any definite evidence in support of the suggestion.

Gordon Byers sends us notes of ten cases in which the

eyeball was removed in childhood, and which he examined as adults. He estimated by means of compasses the transverse and vertical diameters of the external orifices of the orbits on the two sides. The differences found between those of the empty orbits and those of the sides unaffected were so slight that they could readily be accounted for by the difficulty in obtaining exactly the same fixed points. His observations went to show that no arrest of development had occurred, at any rate as far as the external orifices of the bony walls of the orbit were concerned.

The disadvantages of evisceration without the insertion of an artificial globe, Graefe's operation, are:

1. Excessive reaction and prolonged stay in hospital.
2. Sloughing of sclerotic.
3. Subsequent pain or irritation in stump.

1. *Excessive reaction and prolonged stay in hospital.*—Out of 200 cases of evisceration without the insertion of an artificial globe, recorded by Bunge, in only five did excessive reaction occur, i. e., so severe as to necessitate a stay in the hospital longer than 12 days (15 to 24 days).

That the reaction after evisceration may be very severe, and considerably in excess of anything which is met with after simple excision, is shown by a case recorded by Knapp, in which the condition of the patient became so alarming that it has led him to abandon the operation. The history of this case is given.

2. *Sloughing of sclerotic.*—Sloughing of the sclerotic after Graefe's operation of evisceration has been met with by Albini in a case in which he performed the operation for panophthalmitis. The history of a case in which the sclerotic sloughed, furnished by Treacher Collins, is given.

3. *Pain or irritation in stump.*—Albini records a case in which, after Graefe's operation of evisceration, the stump left was painful.

The suggested disadvantages of Mules' operation are:

1. Excessive reaction.
2. Sloughing of sclerotic.
3. Prolonged stay of patient in the hospital.
4. Escape of artificial globe.
5. Breakage of artificial globe.
6. Subsequent pain or irritation in stump.

1. *Excessive reaction*.—The amount of reaction which follows Mules' operation varies considerably; it is always more than after simple excision. In a case recorded by Sydney Stephenson, (a brief abstract is given) it was very excessive. Stephenson states that this was the only bad result he had had out of thirty operations. Frost and Grimsdale, as the result of their experience, drawn from 120 cases of Mules' operation, say with regard to the reaction that the amount varied much in different cases. "It was certainly greater in the earlier than in the later cases. It was not sufficient in any case to cause alarm, or to necessitate the removal of the sphere."

In the cases in which reaction was most severe the upper lid became swollen, and there was a good deal of pain. In many cases the conjunctiva became much chemosed, and protruded between the lids. When this occurred its circulation became impeded by the pressure of the lids, and the swelling of the protruded portion increased. In consequence of this a semi-solid mass of infiltrated conjunctiva would sometimes remain protruding long after the case was otherwise well. It was always connected with the conjunctiva below the wound. It was dealt with in various ways. In some cases it was excised, while in the majority it slowly diminished. As soon as it became sufficiently reduced for the lids to be brought over, it rapidly subsided. In a few cases the lids were stitched together over the swelling with excellent results.

In two cases operated on by Lang at the Moorfields Hospital, in which considerable reaction followed (swelling of the lids and conjunctiva, etc.) the patients became very hysterical. One was a woman aged twenty-four, and the other a girl aged nineteen. In the first case the patient ultimately did well and obtained a good stump. In the second case the artificial globe escaped on the eleventh day.

Bickerton, who has performed the operation fifty times, has never known suppurative orbital cellulitis to occur. He found that the swelling has generally completely disappeared by the tenth day. He believes that the severity of the pain does not usually bear any direct relation to the degree of swelling, for while pain is greatest during

the first forty-eight hours, swelling is generally greatest on the third and fourth day.

With regard to the amount of febrile reaction, Bickerton says, it is usually slight, the temperature rising about a degree on the second and third day, the pulse being accelerated in proportion. In many of his cases the temperature did not rise above  $99^{\circ}$ . In one case it rose to  $102.4^{\circ}$ , and in another to  $100^{\circ}$ ; in both sloughing of the sclerotic occurred. Webster Fox has recorded two cases in which the temperature went as high as  $105^{\circ}$ .

Vomiting, sometimes severe, and more than can be attributed to the effects of the anesthetic, occasionally follows the operation.

2. *Sloughing of the sclerotic.*—This seems to be an occasional but rare occurrence after Mules' operation. Mules mentions to us that in one of his cases the sclerotic necrosed. This he attributed to the use of hot corrosive sublimate solution used to arrest bleeding in an old glaucomatous eye. Frost and Grimsdale sent the history of such a case. Bickerton says, he has seen sloughing of the sclerotic in two cases.

3. *Prolonged stay of patient in the hospital.*—It has been suggested that the prolonged time which patients have to remain under treatment after Mules' operation might become a serious objection to its universal practice in hospitals where the pressure on the accommodation for in-patients is great. Frost and Grimsdale state that in their 120 cases the average time in hospital after the operation was seventeen days. The average after excision they found to be ten days. The average time that patients remain in the hospital after excision at the Moorfields Hospital is considerably less. MacLennan, the house surgeon, estimated that the average stay in fifty cases which were not retained for the treatment of an affection of the other eye was 3.61 days. In eight cases of Mules' operation performed at the Moorfields Hospital by Treacher Collins the average stay in the hospital was twelve days. In Bickerton's cases of Mules' operation the average length of stay of the patients in the hospital was fourteen days, and the average stay in bed ten days. It is probable that the length of stay in a hospital is to a great extent influenced by the relative scarcity of beds.



4. *Escape of the artificial globe.*—When the artificial globe escapes it usually does so within a few weeks of the operation.

Frost and Grimsdale have divided their 100 cases into “successful”—those in which the scleral wound was healed in its whole extent when the patient was discharged; “partially successful”—when at the time of the patient’s discharge the sphere was in part exposed, but the ultimate results not known; and “unsuccessful”—where the sphere escaped or was removed.

Successful	-	-	-	82 cases	-	68 per cent.
Unsuccessful	-	-	-	35 “	-	30 “ “
Partially successful	-	-	-	3 “	-	2 “ “
				120	100	

Hartridge informs us that in nineteen cases of Mules’ operation which he has performed the glass globe came out in six (31.5 per cent.), usually between the tenth and fourteenth days. Power and Vernon send us a list of thirteen cases of Mules’ operation, in three of which the globe escaped (23 per cent.) Bickerton records forty cases, in five only of which the globe was extruded (12.5 per cent.)

Several recorded cases show that the artificial globe may be retained for many years and the stump remain in a satisfactory condition. For instance Mules, ten years. Brudenell Carter, three patients upon whom he had performed this operation in 1886, 1887 and 1888, respectively, and who were still wearing artificial eyes with perfect comfort and with natural appearance.

Frost and Grimsdale record eighteen cases in which the patients were seen more than six months after the operation.

6 months to one year	-	-	-	-	3 cases.
1 to 4 years	-	-	-	-	9 “
Over 4 years	-	-	-	-	6 “
					18

These two observers have endeavored to determine in what class of cases and at what age the operation is most successful, and have arrived at the following results:

The most favorable cases were those of corneal opacity



in patients over fifteen; the failures in these were only 13.5 per cent. Patients over fifteen, however, did not yield good results (in cases of recent injury), for the failures amounted to 45 per cent. The result seem to show that while cases of corneal opacity give better results than those of injury at all periods of life, the results are much better after puberty than before (13.3 per cent. and 30 per cent of failures); cases of recent injury do better before puberty than later (20 per cent, and 45 per cent of failures.)

They have also found that with their increasing experience of the operation their percentage of failures diminished; thus they had in the first six years sixty-two cases with 35.5 per cent. of failures, and in the last six, fifty-eight with 24 per cent. failures.

If the wound has once firmly and completely closed over the artificial globe it does not, as a rule, subsequently give way and reopen. We have, however, been able to collect the notes of seven cases in which reopening of the wound did occur, in one as late as six years, and in another five years after the operation. Brief notes of these seven cases are given.

5. *Breakage of artificial globe.*—It has been several times urged as an objection to the introduction of a hollow glass globe into the sclerotic that a sharp blow inflicted on the stump might fracture it, and leave the sclerotic filled with fragments of glass. W. E. Keall, of Bristol, to meet this affliction, substituted hollow silver globes for the glass ones. These metal globes do not seem to have been nearly so extensively used.

We have not received notes of any cases, nor do we know of any that have been recorded, in which the glass globe has been broken after its insertion. We have found two cases in which silver globes have been inserted, followed by argyrosis of the stump: in one operated on by Richardson Cross, of which details are given, a bluish-black appearance of the stump was noticed six months after operation.

6. *Subsequent pain or irritation of stump.*—Frost and Grimsdale only know of one of their 120 cases in which there was any after trouble of this nature. In this patient, two years after the operation the stump was irritable, with

lacrymation and mucous discharge. This subsided under treatment, but it recurred eighteen months later. A mass of "cockscomb" granulations was now discovered in the upper *cul-de-sac*. This was excised, and there was no further trouble.

H. H. Folker has met with three cases in which he afterward performed excision on account of pain in the stump. In the first of these, the patient, aged forty-one, had a Mules' operation performed on the right eye, and two years afterward suffered intense pain in the stump with sensations of light and sensitiveness of the other eye. In the second case the patient, aged thirty-seven, had a Mules' operation performed for corneal staphyloma and a year later requested to have the eye removed as the pain in it was so acute. The third case was a patient aged forty-five, who had been operated upon by Mules himself, and who four years after complained of great pain, which was accompanied by marked injection, swelling of the lids, and photophobia of the other eye. A fifth case (Richardson Cross) is also reported.

*(To be continued.)*

## OPHTHALMIC NEWS.

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(Under this heading the ANNALS will publish items of interest to its readers. Please address B. E. Fryer, M. D., 520 East Ninth Street, Kansas City, Mo.)

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Professor Dr. Oscar Liebreich celebrated his sixtieth birthday on February 14.

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The French Congress of Medicine (the fifth) which is to be held at Lille will open July 28.

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Dr. Witold-Narkiewicz-Jodko, formerly Professor of Ophthalmology at the University of Warsaw, is dead.

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Dr. Geo. H. Simmons, of Lincoln, Neb., has been appointed editor of the Journal of the American Medical Association.

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Professor Snellen, of Utrecht, it is believed, will retire at the end of the present session from the chair of ophthalmology in the University of Utrecht.

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The meeting of the Pan American Medical Congress has been postponed from December, 1899, to December, 1900. Caracas is the place of meeting, the winter climate of which is very delightful.

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At the annual meeting of the Chicago Ophthalmological Society, January 10, the following were elected officers: President, Dr. Lyman Ware; vice-president, Dr. Casey A. Wood; secretary, Dr. C. P. Pinckard.

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Drs. E. C. Ellett and A. G. Sinclair have been elected oculists on the new staff of the Memphis City Hospital and Dr. Ellett has also been elected Ophthalmic and Aural Surgeon of the Lucy Brinkley Hospital, Memphis.

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A new Zeitschrift für Augenheilkunde comes from the press of S. Karger. It is edited by Professors Kuhnt (Konigsberg) and V. Michel (Wurzberg). There is a large number of German and foreign contributors.

The many friends of the editor of this department of the ANNALS, Dr. B. E. Fryer, of Kansas City, Mo., will be grieved to learn that on April 7th his wife died after an illness of ten days. His associates upon the staff of the ANNALS and the ophthalmic world extend to him our sympathy.

H. V. W.

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Appleton & Co. have published the second American edition of Professor Ernest Fuchs' Text Book of Ophthalmology. It is translated and revised from the seventh enlarged and improved German edition, by Dr. A. Duane, assistant surgeon, Ophthalmic and Aural Institute, New York.

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Among others who are to read papers at the coming meeting of the Illinois State Medical Society are the names of the following oculists: Drs. L. J. Schifferstein, Effingham; J. A. Pratt, Aurora; W. O. Nance, Allen T. Haight, W. H. Wilder, J. Elliott Colburn, C. D. Westcott, C. P. Pinckard, Chicago.

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Dr. Charles A. Oliver has revised and edited, from an authorized translation, Donders work, "An Essay on the Nature and Consequences of Anomalies of Refraction." The work will be issued very shortly. Dr. Oliver having prepared this great book for publication is a sufficient guarantee that it is thoroughly and scientifically done.

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An ophthalmological society has recently been started in Moscow, and now numbers 27 members. At the opening meeting Prof. F. A. Jewezki delivered an address on the development of ophthalmology in Russia. Prof. A. A. Krjukow was elected president and Prof. Jewezki vice-president of the new society. (British Med. Journal, Feb. 25, 1899.)

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Mr. Charles Bader, M. R. C. S., England, Consulting Ophthalmologist to Guy's Hospital died on February 13, at his country house at Stoke Ferry Norfolk, England. Mr. Bader was educated in Germany, his native land, but came to London in 1861, to be Assistant Ophthalmic Surgeon to Mr. A. Poland, who with Mr. J. F. France then had charge of the eye wards of Guy's Hospital. He was, in 1873, made full Ophthalmic Surgeon. He was 72 years old when he died.

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The fact that telegraphy without wires has been made possible, and has been actually demonstrated is much outdone by the working proposition of a so-called optical college in one of our large western cities. It proposes not only to teach refraction, but also ophthalmic diseases and surgery by long distance correspondence. This, accompanied by the statement that examination for degrees can also be accomplished by correspondence, is even beyond the marvelous. Is there no remedy?

At a recent meeting of the Pathological Society of London (extract from letter in New York Medical Record, March 25, 1899) Dr. Galloway referred to two rare skin diseases. One, "xanthoma with giant cells," which had been called by Unna "pseudo-tuberculosis of the skin," is infective and usually appears at first on the lower lid. In the other disease tumors appear over the surface of the body, in which are numerous giant cells. They resemble sarcoma, but after some months disappear as rapidly as they had come. Clearly histological evidence alone could not settle the diagnosis. Inoculations must be made as well.

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At a meeting of the Berliner Ophthalmologische Gesellschaft February 23, 1899, the following papers were read:

1. Weitere Beobachtung über den physiologischen Pupillenabschluss.—Hr. Hamberger.

2. Experimentelle Studie über Cataracta traumatica—Herr de Obarrio.

And at the meeting of the society, January 26, 1899, the following are the titles of the papers which were before the society:

1. L'influence du sympathique dans la tension oculaire, by Hr. Neuschuler.

2. Hemorrhagisches Glaucom nach Phlebothrombose, by Hr. Fehr.

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During the last annual meeting of the Western Ophthalmologic and Oto-Laryngologic society February 10-11, at New Orleans, the vice-president, Dr. W. Scheppegrell presided in the absence of the president, Dr. J. Elliott Colburn, who was unable to leave Chicago on account of illness in his family. Dr. Scheppegrell made an excellent presiding officer, giving points from time to time, as to confining discussional debate to the subject matter under consideration, and keeping the work up well with the time allotted on the program. It was decided by the society, that at the next meeting, which will be held in St. Louis (April, 1900) that the meeting shall last three, instead of two, days. This arrangement will give ample time for both general and section sessions.

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The Berlin Medical Society and female members. "A second attempt has been made to introduce female members into the Berlin Medical Society. At the meeting last week a lively debate took place on the proposal of Drs. Freudenberg and Zadek to call a general meeting for the purpose of altering the society's statutes in such away as to make them include female Doctors of medicine. Prof. Virchow, the president, strenuously opposed the motion of calling a special general meeting, and Dr. Fraenkel moved that the whole matter stand over till the next annual general meeting. But there was no majority even for this compromise, and finally a suggestion of Prof. Virchow was carried—to send back Drs. Zadek and

Freudenberg's motion to the committee for further consideration. (British Med. Journal, Feb. 25, 1899.)

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The Sections on Ophthalmology and on Laryngology and Otology, of the American Medical Association, at the coming annual meeting, will give the morning of the second day, to a joint session. Dr. Casey A. Wood, of Chicago, is chairman of the Ophthalmic Section. "The relation of ocular diseases to affection of the nose and neighboring cavities," will be the subject for discussion at this joint meeting. Four papers are to be read on this subject, by invitation, as follows: Dr. Charles Stedman Bull, of New York, on "Some points in the symptomatology, pathology and treatment of the sinuses adjacent and accessory to the orbit." Dr. D. Bryson, Delavan, of New York, on "Nasal stenosis in their relation to ocular disturbances." Dr. Joseph A. White, of Richmond, Va., on "Eye troubles attributable to naso-pharyngeal and aural disturbances." Dr. J. H. Bryan, of Washington, D. C., on "Diseases of the accessory sinuses in their relation to diseases of the eye." General discussion on the main question."

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At the meeting of the Western Ophthalmologic-Oto-Laryngologic Association, held Feb. 10-11, 1899, at New Orleans, the following were elected officers for the ensuing year: President, Dr. W. Scheppegegrell, of New Orleans; vice-presidents, Drs. M. A. Goldstein, of St. Louis, H. V. Würdemann, Milwaukee, and E. C. Ellett, Memphis; secretary, F. C. Ewing, St. Louis; treasurer, Dr. W. Layton, Lincoln, Neb. The following were elected members: Dr. J. A. Caldwell, of McKinney, Texas; Dr. O. Joachim, New Orleans; Dr. W. H. Ballenger, Galveston, Texas; Dr. J. S. Mott and Dr. Joseph S. Lichtenberg, of Kansas City; Dr. J. W. Bettenger, St. Paul; Dr. H. M. Starkey, Chicago; Dr. R. Bronson, Hot Springs, Ark.; Dr. Max Thorner, Cincinnati; Dr. J. W. Scales, Pine Bluff, Ark.; Dr. E. M. Singleton, Marshalltown, Iowa; Dr. F. C. Ewing, St. Louis. The following were elected honorary members: Drs. George E. Stevens, of New York; St. Clair Thompson, London; R. Coen, Vienna; E. J. Moure, Bordeaux; Prof. Or. Sendziak, Warsaw; Marcel Natier, Paris; C. Zien, Dantzic, and A. A. Guye, Amsterdam. The meeting was well attended, and the majority of the papers read were both scientific and interesting.

## BOOK NOTICES.

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### THE CRYSTALLINE LENS SYSTEM.

STRICKER, LOUIS, M. D., Cincinnati, Ohio, 1899. *The Crystalline Lens, Its Embryology, Anatomy, Physiological Chemistry, Physiology, Pathology, Diseases, Treatment, Operations and After Changes, with a Consideration of Aphakia.* (Price \$5.00 by subscription only.)

This addition to American ophthalmological literature, is one that will be welcomed by all ophthalmologists who, not possessing a knowledge of the German language, have been debarred from availing themselves of the many and extensive contributions of German writers to the subject of the Crystalline Lens and Zonule of Zinn. The volume before us is a very complete compendium of all that has been done in this branch of the science in the last three decades. The two great works of Becker, "Pathologie und Therapie des Linsensystems," published in the Graefe-Saemisch Handbunch. Vol. V, 1877, and "Zur Anatomie der Gesunden und Kranken Linse," which appeared in 1883, and of which the present work is so great part a translation, are certainly wonders of the period in which they were produced.

Although great strides have been made in microscopy and laboratory methods, comparatively little that is new has been done in this department of ophthalmology since. However, the new facts and theories that have been advanced by various authorities of all countries in the last twenty years are here happily epitomized and presented in such form as to be readily accessible for references.

The numerous foot note references (about 350) and thirty-four hundred taken verbatim from Becker's "Pathologie und Therapie des Linsensystems," comprise one of the most complete bibliographies we have seen, covering the literature from 1532 to the present time, and including works in all languages. So much for the scope and usefulness of the work, of which we have no criticisms to offer.

Considering the book itself, however, from a literary and book maker's standpoint, we are sorry to say that much carelessness has been displayed. Its value as a scientific work would have been much enhanced by a more careful proof reading before going to press, and by one expert in American rules of orthography, prosody and punctuation, so that the multitudinous errors of all descriptions might have been eliminated. The fact that the author may do much of his thinking in German might in part excuse the too frequent use of capitals and the misuses of punctuation and quotation marks, but there can be no excuse for allowing to appear such errors in spelling as the following: Ophtalmoscope, Vescicular,

"Catarkta," Ophtalmia, Astigmatism, Hyperphasia, Von Yäger, Aequator and others too numerous to mention, or for the use of "neuralgia" for neuroglia, "exercised" for excised, "skiascopy" for skiascopy, "trpsin" for trypsin, these being but a few examples of the carelessness in the type-work.

As to the translation we will only notice the German word *Casuistik* that appears several times in the table of contents, and the explanatory remarks in the references taken from Becker, all of which should have been rendered into English; it would also have indicated a greater disposition to thoroughness if the various extracts from Latin, French and other languages had been translated into English. We cannot commend the arrangement of the index, as it is far too incomplete for a work of this kind. The book itself is, unfortunately, printed on poor paper and is poorly bound.

CROCKER.

In the introduction the author explains partly the character of his book. He contemplated the publication of an English translation of Otto Becker's classic exposition of the Crystalline Lens in Graefe and Saemisch Handbuch and after the appearance of Becker's second work "Zur Anatomie der Gesunden und Kranken Linse," in 1883, decided instead of a translation, to cull from both of these classics their most important teachings and to supplement these extracts by the addition of "a most careful and critical review of all that has been published on this and kindred subjects since that time." In view of this admission of the author that the work is not a record of original research but a compilation of the most authoritative knowledge, remodelled to fit the exacting requirements of to-day, we commend it. The ophthalmologists who are conversant with German and those who are not are under deep obligations to the author for his complete and exhaustive production and for the time and labor he has spent in searching through literature for many years back in his efforts to make a scholarly book. The title as above enumerates the subjects discussed but it gives an inadequate conception of the many subdivisions that have been carefully considered. We venture to promise that the practitioner or student who refers to this book for information concerning any mooted point however insignificant will not be disappointed and the historian interested in the evolution of the treatment of diseases of the lens by operation will be rewarded.

It is a matter of regret that any adverse criticism is called for in so excellent a book. We expect to find in translations from the German a construction of sentences that is more or less German and we pay no attention to it but we must protest against an orthography that is not recognized by either the German or the English scholar. Throughout the pages of Dr. Stricker's work "ophtalmolic," "ophthalmology" and similar words are, without exception, misspelled. Several other instances of unauthorized changes in spelling, not to be attributed to mistakes of the printing apparatus, are noted. Grammatical and typographical errors are altogether



too numerous. Such evidences of ignorance or haste detract from the pleasure of reading the book but they are superficial and can be eliminated from all future editions. H. F. H.

From the prospectus received by the editor a number of months before publication, his expectations were raised only to be disappointed. The chief value of the work is in the translation and extensive excerpts from Otto Becker (*Pathologie und Therapie des Linsen-Systems*, Graefe-Saemisch Handbuch, Vol. V, 1877). I do not think that the author has added any modern ideas to this compilation. Indeed, the translation is materially deficient in places, such as the consideration of aphakia ensuing after operations upon hyperopic and myopic eyes. His statistics belong to the period of Becker and Donders. Surely the researches of the last five years should not permit the author to indulge in the following error: "— in which an aphakic eye was not improved, either by use of a plus or a minus glass. In this case the visual axis of an eye which had become emmetropic by aphakia, must have had a length of 30 mm. and from this we may draw the deduction that as long as the lens was present in the eye there must have existed a myopia of about  $1/3$  ( $-10$  to  $-11$  D). A glass of  $1/8$  ( $+5$ . D) or less is now sufficient to see in the distance, and not infrequently patients state that they now see better with a  $+4$ . D,  $+5$ . D, or less, than they formerly did with the myopia of  $1/5$  ( $-8$ . D) or more."

The book is marred by the use of the old inch system as a standard, the metrical equivalence being in some places apologetically given in brackets. A fairly complete bibliography up to and including a portion of the year 1898 is given. The book contains a large amount of matter but the index is not complete and the reader will have difficulty in finding certain subjects. The printing and proof reading are extremely poor; the binding of the book is bad. Despite these deficiencies, the work occupies a definite place in English ophthalmic literature and is sufficiently valuable to be recommended for what may be found within its pages. H. V. W.

**AN ESSAY ON THE NATURE AND THE CONSEQUENCES OF  
ANOMALIES OF REFRACTION.**

DONDERS, F. C., M. D., Late Professor at the University of Utrecht.  
Revised and Edited by CHARLES A. OLIVER, A. M., M. D. With  
portrait and other illustrations. Philadelphia, P. Blakiston's Son  
& Co. 1899. Large 12mo., 80 pages. \$1.25.

The editors preface is a review in itself, and I am not presumptuous enough to criticise the book before me, for Dr. Oliver well says that "to disturb the results when given in trust, as it were, in a posthumous publication, would be destruction." Donder's book is already a classic, although it was first read by some men even now in active practice, but ophthalmology has made such strides since 1860 that we are apt to think that most of our knowledge has been acquired within this generation. That this is not so, especially in the sphere of human refraction, is well illustrated by the

"Aphorisms" before me. The table of contents has seven sections dealing with (1) Emmetropia and Ametropia, (2) Amplitude of Accommodation, (3) Visual Acuteness and Projection, (4) Line of Direction, Center of Rotation and Movements of the Eye, (5) Acuteness of Vision and Amplitude of Accommodation Modified by Neg. (6) Consequences of M. and H., (7) Regular Astigmatism. Of course views have changed, but propositions of physics and physiology have not been so largely added to, after all. How clear is the proof (in Aphorism XXIII) that in aphakia there is no accommodation left, and still the dispute goes on about the phenomena in this condition. The strong influence of consequence and accommodation in myopia or hypermetropia (Aphorism XXXVII) is beautifully exposed, better than is usual in most modern text books. One might say that Donder's ghost had stood over the editor's shoulder's while he transcribed Aphorism XXXIX, and pushed him slyly in the ribs while he wrote "Each ametropic case should not at once be neutralized."

And so I have been refreshed through every one of the 139 aphorisms of the master. I would not, if I could, criticise the optics of physics in the book, for to do that would require that profound knowledge of the mathematics of each problem which Donders does not give in detail here, and which takes for granted a line that we do not all possess. The book, therefore, is far from easy reading, as literature, but Donder's conclusions are inspirations in themselves, they ought to be studied again and again till learned by heart by every working ophthalmologist. The whole world of eye doctors ought, therefore, to be more than grateful to the editor who has so whole heartedly restored to us one of the treasures that might have been forgotten in the busy rush of the present day, and to the publisher who has put into such finished form the words that might have suffered by anything less beautiful than this book.

A. B. H.

#### **A PRACTICAL HANDBOOK OF THE MUSCULAR ANOMALIES OF THE EYE.**

HANSELL, HOWARD F, A. M., M. D., and REBER, WENDELL, M. D.  
28 Illustrations and 1 Plate. Philadelphia. P. Blakiston's Son & Co., 1899. 182 pages. \$1.00.

The authors of the book are too modest, or else they ascribe to the student a knowledge unusual in early medical life, for they say in the preface that it is intended for "beginners in ophthalmic work." Indeed, even the enders in ophthalmology will be obliged to go far and seek long before they find so much useful, practical knowledge as is compressed into these pages. Perhaps the laboratory student of physiologic optics might miss some details of cerebral physiology or pathology, but the worker even of the highest class can find little omitted or slighted in this hand book.

There are four parts: Part I. dealing with Anatomy and Physiology. Part II. with Structural Anomalies. Part III. with Functional Anomalies, and Part IV. with Operations, Structural

Anomalies discusses Ocular Palsies; Functional Anomalies deals with heterophoria and heteropia, this latter term being used—a more preferable expression too—instead of squint or strabismus. In this manner the reader is conducted through the anatomy and physiology, ordinary paralytic squint (excuse the word) to the more complex and subtle phenomena of muscle instability. All this implies such a thorough knowledge of optics, especially in the use of prisms, and of retinal perception, that the reader must often stop to think very hard before he is justified in progressing to the next paragraph. I have missed, and I think with reason, in the chapter on ocular palsies, the classical plates of Landolt and Magnus giving a graphic presentation of the double images seen in the various muscular paralysis; I am still simple enough to find interpretation of such conditions made much easier by a picture, and I am sure the beginner can fix the subject in his mind by these aids.

Heterophoria, that battle ground for neurologists and seekers for reflexes, for materialists or impressionists, is splendid. The chapter is not written to advocate muscle-snipping alone, or to poohpooh all attack on muscles unless there is a squint discernible by the lay relative. There is given only the plain facts of the subject—diagnosis first, correction of refractive errors and bad health second; muscular exercise third; operation last. A true and honest method. And the principles of examination are so clear and precise that no one can fail to work well under such guidance. The Maddox (compound) rod is preferred for all diagnostic work.

If I differ from the authors in anything, it is in their explanation of the causes leading to exophoria; I was surprised and gratified to learn that in their experience esophoria is the more usual condition of imbalance, and to find not too much stress laid on the differences between the tests for distance and for the near, but I cannot agree with their association of myopia with exophoria. To be sure “the higher the myopia, the nearer to the eye is its far point,” but the myopic eye is a large eye, and so lying as it does, in the orbit that its visual axis is normally outward, the convergent effort, irrespective of associated (weak) accommodation, is excessive; it must be, to produce binocular vision at all. This convergence alone, directed to pulling a large eye over a greater distance, is finally exhausted and a functional paresis allows the externi to exert their normal power, which results in exophoria.

There are only a few adverse criticisms I can make. The authors mix the old English with the modern decimal scale, using feet and meters indiscriminately; as it is a hobby of mine to avoid this, I delight in assailing others who do not. Esotropia is defined as that condition in which the visual lines cross at some point inside of infinity. Inside of the fixation point is more exact. No mention is made of the unusual esotropia accompanying myopia. The advice is given to operate for heterotropia under general anesthesia when young children are the subjects, whereas on page 164 it is explained that operation is best under local anesthesia. I have learned by

experience that a tenotomy under chloroform is very often useless, and I fully agree with Schweigger that before the age of puberty a tenotomy should not be attempted. The perimetric measurement of squint is not emphasized, and Landolt's and Oliver's beautiful exercises with the stereoscope are too little noticed.

These are but trifles, however. The book is full of healthy meat. I cannot begin to pick out the good things, they are so numerous. The student should purchase the book and do this for himself. Only by a careful reading and rereading can one appreciate the thoroughness of the authors, from preface to the exhaustive index, and when I add that the publishers have kept pace with the authors in excellence, I have done no more than my duty to the volume before me.

A. B. H.

**THREE THOUSAND QUESTIONS ON MEDICAL SUBJECTS ARRANGED FOR SELF EXAMINATION.**

(*Self Examination for Medical Students.*) With the proper references to standard works in which the correct replies will be found. Second edition enlarged. Philadelphia. P. Blakiston's, Son & Co., 1899. 10 cents.

This is a neat little book of 189 leaves, the left hand page only, being printed, leaving the right hand blank for either answers or new questions. The answers themselves are indicated by two numerals, the first serving to show in which book to look, the second, on which page. The books to which reference is thus made are Morris' Anatomy, Gould's Students Medical Dictionary and the Quiz-Compend *?* of the publishers. Of course this implies the possession by the student of these particular manuals, but as they are cheap, and as certainly among a class of students a set is surely to be found, there is really no hardship. The questions are all practical and pertinent, the volume so small that it can be easily slipped into the pocket, and the press work excellent. For the low price of ten cents nothing half so good can be purchased.

A. B. H.

**RETINOSCOPY (OR SHADOW TEST) IN THE DETERMINATION OF REFRACTION AT ONE METER DISTANCE WITH THE PLANE MIRROR.**

THORINGTON, JAMES, M. D. Forty-three illustrations (twelve in colors). 86 pages, 12 mo. Philadelphia. P. Blakiston's Son & Co., 1899. Third Edition—revised and enlarged. One dollar.

I have followed Thorington's Retinoscopy so gratefully since its first appearance, that I am speaking of an old friend when I review it. I hardly thought there was room for improvement, but the author has so changed a word here and there, and added to the text by a new cut, that, indeed, this last is better than the first. The book is particularly valuable to the worker in the office, for it furnishes him a never-failing reference of practical rules without the elaboration of optical principles and formulæ which too often intrude upon and confuse the daily use of lenses. It aims, chiefly, to furnish a guide to the practitioner, and for that reason there is only slight

reference made to work with the concave mirror, the author restricting himself to the technique of the plane mirror, nor is there any delay over the question of various distances, although many text books discuss these methods, for Thorington believes that the working distance should be one meter, as the simplest, most serviceable standard for both observer and patient.

Enthusiasm in any one subject is of undoubted value to help toward perfection, and the practitioner whose office work is largely devoted to the problems of defective eyesight and headache so common in our busy world, must command every means for achieving satisfactory results. Thorington's enthusiasm is breathed into his book, and he makes of it, therefore, a living guide. Every method must submit to the patient's ultimate subjective feelings with the glasses prescribed, but one who has once worked with Thorington will be obliged to confess that Retinoscopy is the best method to use in the dark room.

The type is large and clear, the paper excellent, and the cuts are explanatory of the matter in hand. Both author and publisher must be congratulated on their efforts. A. B. H.

#### ATLAS OF OPHTHALMOSCOPY.

OELLER, J., München, (*Atlas der Ophthalmoskopie*. Kgl. Hofrath, Privatdozent, an der Universität München. Fünfte Lieferung, 15 Tafeln mit Text. J. F. Bergmann, Wiesbaden, p. 10 M.)

It is with pleasure that I notice the completion of Oeller's Atlas; the four preceding parts of which have been favorably criticised in this publication. The fifth and last part contains fifteen admirably drawn and well reproduced plates of: The Varieties of Normal Fundus Oculi; Diseases of the Optic Nerve; Diseases of the Retina; Diseases of the Choroid; Congenital Anomalies. These drawings have been made by actual cases; description of which is given in both German and English, the translation by Dr. A. H. Knapp, of New York. The plates are of large size, well suited for framing and for teaching. The artistic and mechanical execution of all the drawings is of the highest class and many subjects are presented which have not hitherto been depicted in any other Atlases of the Ocular Fundus. The published list of subscribers shows that the work is met with appreciation. I most heartily commend it to the attention of our readers. H. V. W.

#### THE NEUROLOGY OF THE EYE.

WILBRAND, H.—SANGER, A. (A Text-book for Neurologists and Ophthalmologists. Part 1st, J. F. Bergmann. Weisbaden).

The first volume of this work is devoted to the neurology of the lids. Here are to be found descriptions of the various physiological and pathological conditions peculiar to the lids all illustrated by numerous cases. We find collected here nearly everything that has appeared in print on this aspect of ophthalmology, and in this respect it is a perfect encyclopedia of information. The first chap-

ter treats of the form and position of the lids, with reference especially to trophic disturbances as periodic oedema, herpes, etc.

The second chapter tells us about the form and width of the lid commissure under physiological and pathological conditions. Of special interest to neurologists is the section on paralysis and irritation of the sympathetic. Chapter III contains a description of the lid reflexes. We find here this interesting observation. Usually in facial paralysis of peripheral origin there will be found associated with the free lid movement of the healthy eye more or less twitching of the lid of the paralyzed side. In chapter IV there is an exhaustive study of the "Von Graefe Symptom" in 36 cases of Basedow's disease, also the "Rosenbach Symptom;" associated lid movements with pupillary changes, and associated movements of the upper lid with opening the mouth. Chapter V contains a description of spasm of the levator palpebrae. In chapter VI is to be found a most exhaustive discussion of the subject of paralysis of the levator. It is interesting to note the fact that in 68 cases of multiple sclerosis, the motor oculi was found involved in 16 cases, ptosis being present in 14.7 per cent. The latter part of this section is taken up with a description of ptosis following nuclear paralysis in acute and subacute inflammations. The first subdivision treats of ptosis in diphtheria, influenza, etc., and in this connection the various intoxications are alluded to. Subsequent divisions of this work will speak of sympathetic ptosis, paralysis and spasm of the orbicularis. Vol. I will conclude with the neurology of the conjunctiva, cornea and lacrymal gland.

R. L. R.

#### **TEXT BOOK OF OPHTHALMOLOGY.**

VOSSIUS. PROF. DR. GIESSEN. (Lehrbuch der Augenheilkunde. Leipzig u. Wien, 1898).

This is the third edition of the work of this author. In quantity the book has grown with advancing years. The earliest edition contains 450 pages with 84 illustrations, while the present edition contains about twice as many pages and four times as many illustrations. The work is characterized by clear writing and by the avoidance of critical discussion of mooted questions in ophthalmology which would not interest the non-specialist. That part of the work treating of the anatomy and physiology of the organ is admirable. The illustrations are excellent and the book must be regarded as one of the best.

R. L. R.

#### **AN AMERICAN TEXT-BOOK OF DISEASES OF THE EYE, EAR, NOSE AND THROAT.**

DESCHWEINITZ and RANDALL, Philadelphia. (With co-operation of 58 prominent specialists, illustrated with 766 engravings, 59 of them in colors; 1251 pages; W. B. Saunders, Philadelphia, 1899, price \$6.00 by subscription.)

The writer takes pleasure in reviewing the latest addition to ophthalmic, aural, rhinological and laryngological literature, and regrets that space prevents him from mentioning in detail the



many able articles which it contains. Like others of the American Text-book series, the space at the disposal of the different contributors is somewhat limited, necessitating brevity and conciseness. On the whole the book is an excellent one and will be of value both as a text-book and as a book of reference.

The list of contributors embraces the following well known authorities and active workers in their special line, among whom will be found members of the staff of the ANNALS OF OPHTHALMOLOGY, the Archives of Ophthalmology, the Ophthalmic Record and the ANNALS OF OTOTOLOGY, RHINOLOGY AND LARYNGOLOGY: Alderton, Allen, Allport, Asch, Ayres, R. O. Beard, Blake, Bliss, Brubaker, Bryan, Buck, Buller, Burnett, Carrow, Casselberry, Cutler, Dench, Dennett, G. E. DeSchweinitz, Duane, Farlow, Freeman, Gifford, Glasgow, Green, Halden, C. R. Holmes, Hopkins, Hotz, Howe, Hubbell, Jackson, Jennings, Knapp, Kollock, Leland, Lippincott, Makuen, McCullom, Miller, Millikin, Myles, Newcomb, Phillips, Piersol, Porcher, Randall, Randolph, Roe, Sajous, Sheppard, Shurly, Sweet, Theobald, Thompson, Veasey, Weeks, Casey Wood, Wright, Würdemann.

The chapter on "General Optical Principles," by Dennett and Cutler takes up the subjects of Katoptrics, Dioptrics and Physiological Optics, treating them in a theoretical and scientific manner, bringing out clearly and concisely the optical principles which form a basis for intelligent work in ophthalmology.

A valuable addition is the chapter on "Spectacles and Their Adjustment," by Phillips, of Philadelphia. This is a subject to which too little attention is paid by many ophthalmologists.

Randolph in his article on "Diseases of the Iris, Ciliary Body and Choroid, Sympathetic Inflammation and Irritation," brings out many points, especially on the subject of Sympathetic Inflammation and Irritation.

The subject of "Diseases of the Optic Nerve," by Gifford, of Omaha, is illustrated with a number of excellent photographs and is treated in a thorough and scientific manner; the classification and pathology of the various forms of Optic Neuritis being especially valuable.

The chapter on "Amblyopia, Amaurosis and Disturbances of Vision without Ophthalmoscopic Change," by Casey A. Wood, is one of the most interesting of the subjects on ophthalmology; the excellent illustrations, showing the pathologic conditions present, clear up a number of otherwise obscure cases; the subject of hysteric and pretended amblyopia is frequently met with in ophthalmic practice, and often calling for the greatest skill on the part of the surgeon in making a diagnosis.

"Amblyopia of the Visual Field, Scotomas and Hemianopsia," by Würdemann, is well illustrated by a large number of diagrams of visual fields taken from case histories, the article including a description of the visual pathway with illustrations showing the course of the optic nerve fibers from their origin to their termination in the fundus oculi.

The subject of Operative Work is well treated by Hotz, Kollock, Knapp, Ayres, Theobald and Buller.

Sheppard of Brooklyn gives an excellent diagram of routine work in aural examinations.

The subject of "Injuries and Diseases of the Drumhead," by Würdemann, is well illustrated by a colored plate showing the membrum tympani in various degrees of injury.

The "Chronic Catarrhs of the Middle Ear" are described by Dench and Buck.

Shurly treats the subject of "Tuberculosis of the Air Passages" giving an excellent description of the pathologic anatomy and bringing out many valuable points in the treatment.

While the association of ocular practice with Otology, Rhinology and Laryngology is common in America, the treatment of these subjects in one volume is not usually done. These specialties have a large amount of literature, the reviewer, personally, would rather have seen Ophthalmology treated alone, and the other, more nearly related subjects of Otology, Rhinology and Laryngology, in a separate text-book. In actual practice the condensation of all these subjects within one cover will be found convenient for reference. This text-book is the most valuable single volume that has ever appeared on these branches of medicine. There is but little repetition, and what there is seems necessary, owing to the treatment of so many subjects by so many different authors. There are a number of colored plates from drawings made by Miss Washington who, at the present writing, is our most skillful artist for depiction of the ocular fundus; many of the illustrations in this volume are original, and most of them are good, although the artistic merit of some of them is open to criticism.

W. R. MURRAY.





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## HYDROPHTHALMOS—A BIBLIOGRAPHIC, CLINICAL AND PATHOLOGIC STUDY.

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Hydrophthalmos is a more or less uniform increase of all the diameters of the infantile eyeball, due to the expansion and consequent thinning of the elastic sclera under increased intraocular pressure. It occurs at birth or in early infancy, but cases of later development have been reported. It may be unilateral or bilateral.

Considerable confusion has arisen from the multiplicity of names used to denote this condition. We find in literature all of the following titles: Hydrophthalmos, hydrophthalmos congenitus, hydrops oculi, dropsy of the eye, buphthalmos, "ox-eye," megalophthalmos, megalocornea, keratoglobus, cornea globosa, globose cornea, glaucoma congenitum, congenital glaucoma, infantile glaucoma and infantile secondary glaucoma.

With such a variety of titles, the difficulties of preparing a bibliography and collecting the various expressions of opinion relative to this subject may be readily understood. Unfortunately no author has called attention to this chaotic state of the nomenclature; it is only by securing the best descriptive name and uniformly adhering to it that universal bibliographic research may be systematically pursued.

Hydrophthalmos is undoubtedly the best name to use. It describes a general underlaying condition without refuting any theory of causation or misinterpreting any local expression of the disease. Hydrophthalmos congenitus and hydrops oculi are not of such common usage and consist of two words. Dropsy of the eye is too colloquial. Buphthalmos and its English equivalent "ox-eye" have been extensively employed, but they are not scientific, and, by many lexicographers, are used only to express that condition in which the eyeball is so distended as to prevent closure of the lids. Megalophthalmos simply means large eye. Megalocornea, keratoglobus, cornea globosa and their English equivalent, globose cornea, refer only to the state of the cornea. In view of the difference from glaucoma in pathologic anatomy, and the denial of the etiologic similarity by some observers, glaucoma congenitum, congenital glaucoma, infantile glaucoma and infantile secondary glaucoma will always excite antagonism.

Hydrophthalmos means increase of the fluid contents of the eyeball, irrespective of the diverse consequences thereof. It would be better perhaps to use a word indicating uniform expansion of the ocular tunics, but there is no such word in current use, and hydrophthalmos has the prestige of being the original term, the one most commonly used at present, and, in addition, one that permits of infinite subdivision.

**HISTORY.**—Hydrophthalmos has been recognized as a distinct affection for many years. There are numerous references to it in the medical literature of the seventeenth and eighteenth centuries, as a glance at the bibliography will show. However, it is very likely that some of the older cases reported as hydrophthalmos were really instances of large anterior staphyloma, exophthalmos, intraocular tumor, etc.

Borellus<sup>5</sup> mentioned hydrophthalmos, and advised treatment by blistering the nape of the neck and using a collyrium of white vitriol. Beyer,<sup>4</sup> in 1774, reported a curious case, and in 1775, Grygerus<sup>19</sup> discussed the subject. In 1776, Terras<sup>35</sup> called attention to the value of paracentesis in the treatment, and Mauchart,<sup>27</sup> Marchan.<sup>26</sup>

Heister,<sup>20</sup> and an author in the *Ephemerides*,<sup>11</sup> made similar observations. In the *Acta Naturæ Curiosorum*, Vol. VIII, obs. 44, there is mentioned a recurrent case (likely secondary glaucoma). Brandis<sup>6</sup> reported the occurrence of the disease in scrofulous patients. Cheston<sup>9</sup> described a fatal case with caries of the orbit. Gendron<sup>17</sup> mentioned the enlargement of the eyeball to the size of a hen's egg. Over a century ago, Conradi<sup>10</sup> attributed the disease to an accumulation of the vitreous humor, Morand<sup>29</sup> wrote of a case in which "the tunica of the optic nerve was dilated and enlongated." Observing the dryness and opacity of the cornea in this condition, Pellier<sup>30</sup> ascribed the cause to "cornea siccatus," and advised the use of emollients. Heister<sup>20</sup> dwelt upon the advantages of compression. Scarpa<sup>32</sup> and Langlebert<sup>22</sup> mentioned extirpation of the eyeball in hydrophthalmos, and in 1790, Langlebert<sup>22</sup> made a similar observation. In 1781, Ford<sup>15</sup> published the history of a case successfully treated, and in 1784, another<sup>16</sup> in which the eye, after vision had been ruined, was reduced to the normal size by means of a seton.

Early in the nineteenth century, Luke<sup>25</sup> published a dissertation on hydrops oculi, and in 1806, Joli<sup>36</sup> issued a similar monograph. In the next few years, Beer,<sup>2</sup> Benedic,<sup>3</sup> Rowley,<sup>31</sup> and Thilow<sup>36</sup> described hydrophthalmos. In 1822, both Sturm<sup>39</sup> and Reeder issued papers upon the subject. In 1830, Bachman,<sup>43</sup> published an extensive article on the causes, varieties and treatment of the condition. In 1832, Von Ammon<sup>45</sup> discussed the pathologic histology. In 1834, Masche,<sup>46</sup> Radecke,<sup>47</sup> and Gerson<sup>48</sup> appeared with papers; in 1836, Grellois;<sup>49</sup> and in 1841, Magdalener.<sup>51</sup> In 1843, Flarer<sup>53</sup> brought forth a paper on "Buftalmia." In 1853, the renowned Nélaton<sup>59</sup> delivered a clinical lecture upon this subject; Arlt<sup>61</sup> devoted his attention to it in 1857. Articles were published in 1871 by Schirmer;<sup>68</sup> in 1876, by Raab;<sup>69</sup> in 1879, by Fano;<sup>74</sup> and in 1881, by Bergmeister.<sup>76</sup>

In 1885, Grahame<sup>82</sup> contributed a valuable paper on the pathologic anatomy of the affection. In the following year, Gallenga<sup>84</sup> collected a number of cases. In 1892, Cross<sup>88</sup> issued a valuable statistical paper. In the same year, Kalt<sup>89</sup> studied the pathology. In the Hunterian

Lecture, London, 1894, Treacher Collins<sup>95</sup> advocated the theory of congenital defect of development. In 1895, Snellen<sup>96</sup> discussed the treatment of conditions leading to hydrophthalmos. In the same year, Lodato<sup>98</sup> and Bockel<sup>97</sup> offered general contributions, and Angelucci<sup>99</sup> advanced the vaso-motor theory. In 1896, Cabannes<sup>100</sup> and Bergmeister<sup>101</sup> reported cases. In 1897, Geos,<sup>103</sup> a medical graduate of Paris, took the subject for his thesis. In 1898, Johnson<sup>106</sup> detailed the history of a most interesting series of cases occurring in the same family.

**SYMPTOMS.**—Hydrophthalmos generally appears in early infancy. The most prominent characteristic is the uniformly enlarged and protruding eyeball (more noticeable in unilateral cases by comparison). The lids seem insufficient and appear small in comparison to the ball; complete closure is often impossible, and part of the cornea may be exposed during sleep (lagophthalmos). Rotation of the globe is impeded, and all ocular movements are slow and incomplete.

The sclera is thinned by overstretching, and presents a peculiar bluish hue due to the uveal pigment showing through it.

The cornea is noticeably enlarged in all its diameters, and is of increased curvature, partially causing the extra protrusion. It is more or less insensitive. Very soon in the course of the disease, the cornea becomes hazy, progressing to varying degrees of cloudiness, although cases are on record in which the cornea has remained translucent (*keratoglobus pellucidus*).

The anterior chamber is generally deep, quite the reverse of the condition in adult glaucoma. However, in cases due to congenital irido-keratitis, the anterior chamber may become almost obliterated, as in adult secondary glaucoma. One of the cases pathologically studied by me showed such a condition.

Unless in the process of active inflammation, the iris is generally more or less atrophied and, as a consequence of this and increased tension, the pupil is partially dilated and sluggish in reaction. If the lens is displaced, or the zonule of Zinn is atrophied, the iris will be tremulous. Such a condition is also associated with a noticeably wobbling lens.

The media are usually too cloudy to permit satisfactory ophthalmoscopic examination, but if the process is of long duration, it may be assumed that the papilla is excavated and the optic nerve atrophic.

There is considerable increase of tension, often accompanied by severe pain. The infant seems irritable and may continually rub and scratch the eye and give other signs of local irritation. When it becomes older, it often complains of a dull pain in the ball.

CLINICAL COURSE,—The condition is recognized at birth or shortly after, and the incipient stages are usually intrauterine. There is a slow but progressive enlargement of the eyeball in all its diameters, with corresponding diminution in vision, due to opacity of the cornea, disorganization of the vitreous, detachment and stretching of the retina, and excavation of the nerve-head.

Sometimes, after a certain stage in the course has been reached, the progress of the disease becomes very slow or entirely checked, and in such cases the tension remains stationary or gradually diminishes to slightly above normal. The enlargement of the eyeball ceases, but in absence of operative interference, the globe seldom becomes much smaller. The degree of preservation of vision depends upon the state of the cornea and vitreous and the amount of injury to the retina and optic nerve.

Unfortunately, in the majority of cases, the tendency is to progressive enlargement, the cornea becomes more and more opaque and may perforate or entirely slough; the optic nerve becomes completely destroyed, and the interior of the eye disorganized, causing total blindness. In rural districts, where medical attention is not common and ocular surgery is in a primitive condition, a case of hydrophthalmos is sometimes allowed to attain enormous proportions. In the classical case of Gendron,<sup>17</sup> already cited, the eye was stated to be "*extensus ad magnitudinem ovi gallinacei*." This case was likely one of neglected large scleral ectasiæ with corneal staphyloma, or intraocular tumor and not true hydrophthalmos.

ETIOLOGY.—The nature of this disease has always been a matter of dispute. The direct cause of the physical changes is increased intraocular pressure. In the child,

the sclera is very elastic, and under increased tension stretches uniformly; in the adult the sclera is tough and resistant and, unless weakened by inflammation, it permits of expansion only at its weakest point—the lamina cribrosa (and possibly at the entrances of the venæ vorticosæ and anterior ciliary vessels). It is for this reason that glaucoma of the adult differs in its physical and pathologic appearances from increased intraocular pressure in children.

From its clinical course, the incipient stages of hydrophthalmos must be intrauterine. Dehenne<sup>80</sup> maintains that infantile glaucoma or hydrophthalmos may also occur in adults if the conditions are the same as those in a child, viz: if the sclera is elastic and yields in its entire surface. Gallenga<sup>84</sup> reports 3 such cases of acquired hydrophthalmos in his clinic at Turin. Dehenne<sup>80</sup> adds that on the other hand, when the sclera and cornea of a child have been extended ad maximum, excavation of the optic nerve begins—and a condition similar to the glaucoma of adults develops.

The two possible direct causes of increased intraocular tension are: first, increased secretion; and, second, obstruction to excretion. Increased secretion may arise from inflammatory changes in the region of the ciliary body, or from general vasomotor and circulatory disturbances. Obstruction to excretion may be caused by partial closure of the iridic angle at the periphery of the anterior chamber or obliteration of the neighboring infiltration channels. Either of these conditions may be the result of an intrauterine inflammation, such as irido-keratitis; or may be noninflammatory, *i. e.*, the result of congenital malformation, such as failure of the iris to completely separate from the cornea, or of the canal of Schlemm to become completely patulous.

Every one of the possible causes has had its adherents and advocates, sometimes to the exclusion of all others, and a veritable war of argument has been waged. Doubtless each reporter has been in a measure correct, and the cases may be divided according to the condition or combination of conditions causing them. The different observers have, as a rule, based their conclusions on the particular case or cases examined, but all of these cases



are not similar, and there is no universally uniform cause. The chief symptoms are the result of intraocular pressure, but the exciting cause thereof differs in the individual case. Therefore the general term hydrophthalmos is better than a term referable to a special cause or a special consequence.

In order to present a full discussion of the etiology of hydrophthalmos, the different theories and the opinions of their prominent advocates are cited below.

*Predisposing Causes.*—In the discussion of hydrophthalmos, various predisposing causes have been advanced. There is abundant evidence that *heredity* plays a prominent part in many cases, although it is sometimes difficult to substantiate the suspicion. W. B. Johnson,<sup>106</sup> of Paterson, N. J., reports the development of 3 cases of the disease in the same family, a circumstance certainly suggestive of the existence of some underlying family tendency for the production of this condition. This, however, could not be practically demonstrated, and, strange to say, the first 3 children were perfectly healthy.

*Syphilis* has long been suspected in the etiology of this disease. As long ago as the last century Brandis<sup>6</sup> spoke of the "scrofulous" origin of the disease, and recent observers have seen the condition in children who exhibited all the associate signs of congenital syphilis. Interstitial keratitis being such a constant symptom of congenital syphilis, there is no doubt that some confusion has arisen, but authentic cases have been recorded, and I have definite knowledge of a case of hydrophthalmos in a child of 14 months with genuine interstitial keratitis. It is in the inflammatory type of the disease that we would suspect hereditary syphilis as a cause.

*Increased Secretion by Inflammatory Changes.*—According to some observers, and particularly Kalt,<sup>89</sup> who made extensive anatomic investigations on this subject, hydrophthalmos is a sequence of a chronic irido-choroiditis (uveitis) which leads to a gradual obliteration of the vessels of the uveal tract. This causes obstruction of the largest portion of the choroidal capillaries and increases the pressure in the ciliary arteries, from which arises the increased transudation of fluid.

*Increased Secretion and Vasomotor Disturbance.*—Angelucci<sup>99</sup> describes a case in a child of 6 years with tachycardia, frequent intermitting of the heart-pulsation, and congenital hydrophthalmos in both eyes. These cardiac disturbances have been observed by him in all his cases of congenital hydrophthalmos; with sometimes, also, valvular insufficiency and dilation of the left heart, arterial hypertension, and subjective and objective sensations of heat on the head and face. In these cases the character is always emotional and high-tempered. These facts lead the author to believe that hydrophthalmos is the result of vasomotor disturbances, and still more so, as trophic affections are observed in such eyes. It might be added that the pain in itself is sufficient to produce an irritable disposition in the child, and that the so-called trophic disturbances are readily explained by the increase of intraocular tension.

*Similarity to Glaucoma.*—Hydrophthalmos is regarded by many authors as a secondary infantile glaucoma, and some consider it a form of primary glaucoma occurring in children. Grahamer<sup>81</sup> cannot agree with Horner, Mauther and other early observers in assuming that every case of congenital hydrophthalmos is one of congenital glaucoma. His investigations demonstrated the absence of inflammation and occlusion of the iris-angle—the test for the existence of glaucoma. He, therefore, believes that either an uveitis or a serous cyclitis is the primary cause, to which increased intraocular tension and other intraocular symptoms are secondary. The decrease in the caliber of the veins of Leber's plexus and obstruction of the spaces of Fontana further serve to augment the intraocular tension. In one of the cases pathologically studied by me, observations similar to those of Grahamer were made.

*Intrauterine Inflammation or Congenital Development.*—Many authors believe that the disease is the result of an intrauterine irido-keratitis, causing the base of the iris to adhere to the cornea and closing the iridic angle. By some the presence of a low-grade keratitis and the atrophic condition of the iris are considered evidence for this belief. Again, there is a class of modern observers who

believe that the corneal changes are the result of trophic disturbances secondary to increased intraocular tension or of exposure by insufficient closure of the lids, and who attribute the general ocular condition to congenital defect of development. There is also evidence, already mentioned, to show that the corneal condition may be due in great part to interstitial keratitis of syphilitic origin.

In the Hunterian lecture, London, December, 1894, Treacher Collins<sup>95</sup> said that he believed that the peripheral adhesion of the iris and cornea was most likely a fault of development—failure in the separation in these structures, rather than a product of disease. In eyeballs affected with hydrophthalmos, though the angle is closed, the rest of the anterior chamber is deep, as fluid accumulates in the aqueous rather than in the vitreous. This shows that the primary obstruction is at the outlet of the aqueous chamber. In the case clinically studied in the present paper, signs indicative of present or past inflammation were absent, and, in addition, there were marked associate physical anomalies. In one of the cases pathologically studied, there was absence of the canal of Schlemm, presumably congenital, as there was not sufficient evidence of previous inflammation to cause the closure. However, before deciding upon congenital absence, it must be remembered that the canal of Schlemm and the spaces of Fontana are often obstructed by inflammatory conditions in the neighboring structures, and this is particularly so in infantile eyeballs.

**PATHOLOGIC ANATOMY.**—The increase in the size of the eyeball is due to the expansion of the elastic membranes of the infantile eyeball on their inner surfaces. Manz examined a case of congenital hydrophthalmos in a relatively early stage of development. He found both the anterior and posterior portions of the globe much enlarged, and the vitreous chamber partly filled with aqueous fluid. I have made somewhat similar observations.

The *cornea* is always more or less opaque, which, as already has been shown, is by some attributed to an irido-keratitis in utero, and by others to trophic disturbances secondary to the increased intraocular tension. In other cases the corneal disease may be in a measure due to ex-

posure, the globe being so distended as to prevent complete closure of the lids (*lagophthalmos*).

The *anterior chamber* is deepened in true hydrophthalmos instead of being shallow, as in glaucoma. There is abundant clinical and microscopic evidence to this effect, and I have definitely confirmed it both macroscopically and microscopically. However, in extensive inflammatory cases, the anterior chamber may be almost obliterated, as seen in one of the pathologic studies presented.

The *sclera* is much distended and thinned, allowing the uveal pigment to show through, causing the peculiar bluish appearance so characteristic of the disease.

The *choroid* and *retina* are stretched and tenuous, and may be detached and partially disorganized.

The *nerve-head* may be intact or may become excavated very soon in the course of the disease; this excavation progresses with the enlargement of the ball and increase of tension until the nerve becomes entirely atrophic. Manz<sup>83</sup> could not find any excavation of the nerve-head in a case microscopically examined by him, and in one of the cases studied by me, there was stretching but no excavation of the nerve-head.

The *ciliary body* is swollen and the contained veins are markedly turgid. The *ciliary processes* become squeezed against the sclera and push the *iris* to the cornea and sclera, where it may remain adherent, and finally, with the ciliary body, atrophy, sometimes disappearing. Cabannes<sup>100</sup> showed a patient with hydrophthalmos and complete blindness. The right eye had been lost for a long time, the left eye was very prominent, extremely large, amblyopic, and the iris was absent. Lagrange explained the *aniridia* by atrophy of the iris, which was first compressed against the posterior surface of the cornea, and had then undergone sclerosing alterations and disappeared little by little as a distinct organ. It might be added that it is possible that the aniridia was the result of defective development.

The *lens* retains its normal dimensions or diminishes in size. The pressure causing the sclera to expand is internal. The pressure upon the lens is exerted on its external surface. As the lens does not enlarge with the rest of the globe, the space between it and the margin of the ciliary

processes becomes greater and greater and the *zonule of Zinn* is put more and more upon the stretch. If the general ocular enlargement is very great, the zonule is so stretched and thinned that it atrophies, and allows the lens to become unsteady or entirely luxated. This is evidenced in advanced cases by a trembling iris and wabbling lens. Dislocation of the lens is followed by its absorption in the vitreous and the usual disastrous consequences.

The *vitreous* is usually more liquid in consistency and full of opacities, the *aqueous* becomes more albuminous.

DIAGNOSIS.—Hydrophthalmos is readily differentiated. Its distinguishing marks are uniformly enlarged eyeball with insufficient lids in infantile life, the peculiar bluish sclera, enlarged and protruding cornea, the alteration in corneal transparency varying from a bluish, milky haze to complete opacity, increase of tension, atrophic or wabbling iris, tremulous or dislocated lens, and deep anterior chamber.

In keratoglobus or keratectasia, the enlargement is not uniform, and the cornea, and, possibly, the neighboring sclera are the parts involved. There is not always rise of tension, and in most cases a previous history of disease or injury is obtainable. Again, such cases would not likely date from birth. In cases of large scleral ectasia with corneal participation, the diagnosis might be confusing, but the irregular form of the staphylomata, and their history should readily distinguish them. Total scleral ectasia may occur at the same time with staphyloma of the cornea, but again, the irregular expansion and protrusion are diagnostic and there is history of previous injury or disease.

In keratoconus, the conical appearance is typical and the cornea alone is involved. There is not usually marked increase of tension, and the cornea generally remains clear.

In glaucoma, the eyeball is hard but not noticeably enlarged, and the anterior chamber is shallow. The sclera has not the peculiar bluish appearance and there is not so much corneal involvement. Again, glaucoma is a disease of adult life, and the history of its progress is entirely different.

In exophthalmos there is no enlargement of the eyeball, simply protrusion. If the protrusion is the result of exophthalmic goitre, there are the associate circulatory symptoms, the enlarged thyroid and the inability of the upper lid to follow downward movements of the eyeball; if the result of orbital growths, the tumor may be defined behind the protruding ball. Again, in exophthalmos, vision is not necessarily involved, unless the optic nerve is pressed upon or stretched or the cornea becomes affected. Intraocular growths might be a source of confusion, but in childhood, glioma of the retina is really the only tumor likely to cause a mistake in diagnosis, and the peculiar ophthalmic appearance ("cat's eye") and the clinical history of this affection are proof conclusive.

PROGNOSIS.—The prognosis of hydrophthalmos is bad. Vision is almost invariably diminished to a considerable extent, although there are rare exceptions to this rule. Warlomont<sup>94</sup> reported a case of hydrophthalmos in a subject of 13 years with preservation of good vision. If the course of the disease is slow, or checked spontaneously or by operation, the amount of vision retained may be possibly preserved until the end of life; but, unfortunately, unless an operation is done in early infancy the cornea is so obscured and the retina and the optic nerve so damaged that useful vision is gone. If the progressive enlargement of the eye cannot be checked, total blindness will ensure and, in addition, enucleation may be necessary on account of constant pain, excessive size, perforation, infection, or disorganization of the globe. It may be added that the prognosis is worse in the congenital form of the disease in which there is absence of the ordinary filtration channels.

SEQUEL.—The serious consequences of this disease are opacity, perforation and sloughing of the cornea, disorganization of the vitreous, atrophy of the iris and the ciliary body, opacity and dislocation of the lens, excavation of the nerve-head and consequent atrophy, intraocular hemorrhage, detachment of the retina and choroid, and, finally, disorganization of the whole ball with panophthalmitis, demanding immediate enucleation. In addition, the ocular muscles and the lids may become atrophic and partially paralyzed from want of proper use.

**TREATMENT.**—The majority of textbooks mention operative interference only to condemn it. Miotics are universally recommended without promise of much result. Minor operations, like the repeated paracenteses are not forbidden. In cases in which the increase of intraocular tension is dependent on synechiæ, iridectomy, before the iritic adhesions are too firmly formed, is recommended as a speedy means of relief. However, a search of the literature shows, among individual reporters, a far more favorable aspect for operative measures. But it must be remembered that it is usually the cases of fortunate issue that find their way into print.

In considering the operative treatment of hydrophthalmos, the pathologic anatomy of the distended eyeball must be borne in mind. The tunics are thinned and distended and the suspensory ligament (zonule of Zinn) is stretched, or, perhaps, ruptured. Again, there is great difficulty in operating upon infants. Hence, sclerotomy, and still more so iridectomy, is dangerous. There are the perilous possibilities of loss of vitreous (sometimes immediately after corneal section) and collapse of the globe, intraocular hemorrhage, and purulent infection of the vitreous. It is universally admitted that iridectomy and sclerotomy, done in the late stages of hydrophthalmos, are liable to be complicated with hemorrhage, and a future state of chronic and painful irritation.

With the italicized remark that *operations, to be of value, must be done in early infancy*, I forebear further comment, and proceed to present the views of individual reporters for and against operations.

*Paracentesis* is considered a plausible procedure by nearly every authority. Even in the last century Mauchart,<sup>27</sup> Heister,<sup>20</sup> Marchan,<sup>26</sup> and Terras<sup>35</sup> mentioned the good effects of single and repeated paracenteses, Juler<sup>90</sup> has performed paracentesis with improvement in a case in which he had been compelled to enucleate one eye on account of corneal perforation.

*Seton, Injection of the Vitreous, etc.*—In 1847, Ford<sup>16</sup> successfully reduced the size of a sightless and dropsical eye by means of a *seton*. In 1843, Flarer<sup>53</sup> tried this mode of treatment with good result. Masselon<sup>85</sup> showed, in



Paris, a child, 22 months old, into whose eye de Wecker had introduced a small golden cannula, 20 months before, on account of increasing hydrophthalmos. The cannula was borne well; the cornea, which had been dull, cleared up; and, at the time of exhibition, tension was normal.

In 1855, Chavanne<sup>60</sup> injected iodin into the globe with little result.

Curious are the remedies of some of the older physicians. Heister used compression. Borellus<sup>6</sup> mentioned blistering the nape of the neck and the use of a collyrium of white vitriol. In 1790, Langlebert<sup>22</sup> reported a case treated by combined operation and cauterization.

*Iridectomy and Sclerotomy.*—Moralt, in 1869, reported a case of hydrophthalmos in which he had performed iridectomy, and, although not aware of any similar cases on record, he admitted the bad prognosis. Lodato<sup>98</sup> has made extensive clinical observations to prove the uselessness of iridectomy in the treatment of congenital hydrophthalmos. In common with other textbook authors, who are always wisely conservative, Schmidt,<sup>73</sup> in 1877, in his article in the Graefe-Saemisch Handbook, says: "In the secondary glaucoma which complicates cornea globosa (congenital hydrophthalmos), iridectomy is very dangerous and offers a poor prognosis." He adds that when, in these cases, rapid increase of intraocular pressure renders some kind of action necessary, it is best to try the effect of repeated paracenteses, which are certainly free from danger.

On the other hand, Dufour<sup>77</sup> advocates iridectomy. Gorecki<sup>87</sup> and Meyer perform it, and, with the present knowledge of the condition, do not consider it nearly so dangerous as formerly. Mellinger<sup>86</sup> reported two cases of iridectomy in hydrophthalmos with good results, occurring in children of 2 and 5 years respectively. In both cases he operated upon the left eye under chloroform and cocain. A broad coloboma was obtained; the diameters of the cornea decreased perceptibly after the operation. Derby<sup>78</sup> reported the performance of iridectomy in 3 cases of hydrophthalmos. In the first case, the disease had lasted 14 years and there was distinct optic atrophy at the time of operation. In the second case, the disease had lasted 10

years. In both cases, the beneficial effect of iridectomy was indisputable. In the third case, the operation was performed in an early stage of the disease, and the process was at once stayed. Eleven years had elapsed since the operation, and no further progress of the disease was manifest. Gorecki<sup>87</sup> presented, at a meeting of the Ophthalmological Society of Paris, a child of 3 upon whom he had performed iridectomy at the age of 10 months, and again at 14 months, with good result.

Bergmeister<sup>101</sup> exhibited a boy of 13, upon whom he had done a successful iridectomy at the age of 6 months for "infantile glaucoma" (increased tension, diffuse opacity of the cornea, moderate enlargement of the ball, etc.) At the time of exhibition there was a normal anterior chamber, no excavation of the disc, and ability to count fingers nearby. The patient had had strabismus since infancy. Worthy of note in this case was an opacity of the equator of the lens in the coloboma, which Bergmeister believed to be due to the contact of the infantile lens with the operation-wound.

Fuchs<sup>91</sup> mentions hydrophthalmos as one of the conditions indicating sclerotomy rather than iridectomy. In his graduation thesis at Paris, Geos<sup>103</sup> says the treatment of hydrophthalmos consists in early operative interference—sclerotomy or iridectomy; the longer the delay, the smaller the chance of success. He is ever enthusiastic enough over early operations to say that hydrophthalmos may be cured by sclerotomy, whereas, for glaucoma this operation is only palliative. He adds that iridectomy is dangerous in eyes very much stretched or greatly enlarged, while it is useful in eyes that are very little distended in the early stages of the disease, in which case it should certainly be tried if sclerotomy has failed. Geos also mentions that when an eye has become greatly enlarged it is better to do repeated sclerotomies than to attempt iridectomy; the larger the eye, the smaller ought to be the incision into the globe. Geos says that medicinal treatment by iodids, mercurials, miotics, etc., is useless, offers no chance of cure, and wastes valuable time. Miotics, however, are useful adjuncts to operations and should not be neglected.

W. B. Johnson<sup>100</sup> has reported a most interesting series

of cases in the same family, in which the results attained by early operation were most gratifying and emphasized the necessity of immediate operative interference. The father and mother of Johnson's patients were healthy, and no significant family history was obtainable. The father had a cataractous lens in his left eye. The first 3 children were perfectly healthy and had normal eyes. The fourth child was born with hydrophthalmos and was operated upon in Naples by de Vincentiis. A sclerotomy was performed at the second month. The fifth child was similarly operated upon at the second month with good result. In the meantime the family emigrated to Paterson, N. J., where the sixth child was born. She was a well developed girl and was first examined in November, 1897, the parents believing that she was developing the condition which had appeared in her older sisters. At that time there was apparently but little advance of the disease, and eserine sulphate (one-quarter grain to the ounce) was instilled 3 times a day. The patient was kept under observation during the next two months, and although the development of the disease was gradual, it was constant. The eyeballs increased in size, the right eye being decidedly larger than the left. The corneæ became hazy, the pupils were slightly dilated, and responded sluggishly to light. Strange to say, the anterior chamber was somewhat shallow. There was profuse and annoying lacrimation.

Johnson performed double iridectomy, and, although the iris prolapsed upon removal of the knife in both instances and the child was extremely restless, the result was most gratifying. About 6 months after the operation the parents brought the child for examination. She had no apparent trouble. The profuse lacrimation had ceased, and the eyes had not increased in size. She had apparently satisfactory vision. Upon examination the eyeballs appeared to have ceased the process of abnormal enlargement, the corneæ were clear, the tension was about normal, and the pupils were responsive to light. In the right eye there was a perfectly satisfactory coloboma; in the left eye there was a darkened scar at the limbus. At the point of incision the iris was incarcerated and the pupil distorted. Both pupils were responsive to light. The ophthalmoscopic examination was not entirely satisfactory; occasional glimpses of



**A Case of Bilateral Hydrophthalmos.**

the fundus seemed to indicate the absence of disease; the vessels, fundus, and nerve-head appeared normal. The progression of the ocular growth was abated, and all of the indications forecasted future useful vision.

*Miotics.*—Both pilocarpin and eserine, being harmless and tending to reduce tension, are recommended, but are of little use when employed alone. As adjuncts to operations they are invaluable.

*Constitutional treatment* is indicated according to the child's general health, but is worthless as a direct curative measure.

*Correction of the Myopia and Astigmatism.*—The enlargement of the antero-posterior diameter of the globe in common (and, indeed, in excess) of the other dimensions produces a myopia, sometimes of such high degree as, in distance, to render vision worthless. Besides, the diseased cornea is likely to be astigmatic. Judging from the absence of mention in literature, these facts have been generally overlooked in the treatment of patients above 3 or 4 years of age. In the case clinically studied by me, a child of 6 was considerably benefitted by simple correcting concave lenses. In cases in which the media are still partially clear and the nerve is not atrophic, if possible, the refraction of the eyes should be determined. This can be usually accomplished by retinoscopy and ophthalmoscopy, and substantiated by the test-lenses. Such refraction should be a useful adjunct to operations.

*Education at Blind Asylums.*—If the child is semi-blind and well-developed mentally for its years, it should be placed in an asylum early, in order that its pliable mind and remaining active senses may be developed and its future life lightened before it becomes too morbid to take interest. With a good institutional training its usefulness in the world will not be entirely impaired.

*Enucleation* is demanded when the eye is painful, attains enormous proportions, becomes perforated or infected. *Evisceration*, *Miles' operation*, or any procedure intended to leave a movable stump in the orbit, would seem to be preferable to enucleation in cases other than those of panophthalmitis. By partially filling out the

orbit they permit of a more symmetrical growth of the face.

#### CLINICAL STUDY OF A CASE OF BILATERAL HYDROPTHALMOS.

*Personal History.*—The patient was a boy of 6, born August 8, 1892, a healthy 8-pound baby. At about the third month the mother noticed what she called “a white scum” over both eyes. She denied all history of sore eyes in the boy. He had measles, varicella, and some minor ailments; but with no serious sequels. Since the age of 3 months, his eyes have appeared large and protruding and have attracted the attention of every trained observer under whose notice the boy has come. At the present time the boy is apparently in the best of health and is well-developed mentally.

*Physical Measurements.*—His height is 118 cm. (47 inches). His weight is 48 pounds; his chest-circumference is 56 cm. ( $22\frac{1}{2}$  inches). The measurements of his head are extraordinary and significant of congenital abnormality in the skull. The head is oblong rather than oval. Its circumference is 55 cm. (22 inches)—little less than one-half his height. The distance from one external canthus to the other is 10 cm.; the distance between the internal canthi is 4 cm., making the palpebral fissure about 3 cm. on each side. The forehead is extremely high and broad; the distance from the nasion over the vault to the inion is 36 cm. (15 inches).

The lower part of the face is well-formed and normal in size. There are no striking abnormalities of the nose, mouth, or throat. His teeth are carious and poorly formed, but not of the notched variety. The 6-year old molars appear better formed than the temporary teeth. The palate is not highly arched, in fact it is well formed.

There are no deformities elsewhere on the boy's body, although his forehead and scalp show scars, the result of many falls due to his defective vision, while playing with his companions. He eats well and sleeps soundly, and seems of good, but not especially cheerful, disposition.

The lids are drawn apart in the accompanying photograph to better show the enlarged corneæ.



*Family History.*—The family history is good. There are two other children, a girl of 17 and a boy of 3, both of whom have normal eyes. The father is a robust, temperate man of 43, with  $\frac{5}{8}$  vision in both eyes and strong accommodation. He says his wife has worn glasses for a number of years, but with them has perfect vision. He denies all history of syphilis and says there is no history of tuberculosis or alcoholism and little or no rheumatism in his or his wife's immediate family. There have been no club-feet, hare-lip, cleft-palate, or other marked congenital anomalies in the family.

*Ocular Condition.*—The sclera has the characteristic bluish-white appearance.

The corneæ measured about 16 mm. horizontally across the base (normal, about 12 mm.). The vertical diameter of the corneal base is about 15 mm. The corneæ are both maculated over their whole surfaces, but the opacities are particularly noticeable in the shape of a V of about 7 mm. base, extending from above downward to a point within 2 mm. of the center of the cornea. This would rather indicate that the exposure was not the exciting cause of the opacity, as in such case the lesion would be below the center or confined to the palpebral fissure. The boy can close his eyes thoroughly and tightly, and his father claims that the eyes are always closed in sleep. Other than the corneal opacities, there are no signs of inflammation in the anterior eye. As in adult glaucoma, the cornea is quite lacking in sensation. Extending from the sclero-corneal junction around the upper half of the cornea is an irregular band of bluish-white opacity from 3 to 4 mm. in width, similar to arcus senilis except that it is continuous all the way to the scleral junction without any intervening rim of clear cornea, and it does not extend the entire circumference of the cornea. It is evidently denutritional in origin.

*Ophthalmometric Measurements.*—The radius of curvature of the right cornea is 8.9 mm. (7.8 mm. in the normal adult eye) and there is no astigmatism. The radius of curvature of the left cornea is 9.1 mm. and there is 0.50 D. of astigmatism at axis 60. Tension is fully + 1 in both eyes.

The iris is light-brown and very atrophic. The pupil is

widely dilated (8 mm. in diameter) and responds only slightly to light-stimulus. The iris is not tremulous, showing that fixation of the lens was still firm. The anterior chamber appears very deep. As the surface of the iris is in a fairly even vertical plane, the approximate depth of the anterior chamber may be theoretically calculated from the known base-diameter and the radius of curvature—about 4 mm. in the right, and slightly deeper in the left eye.

*Ophthalmoscopic examination* was rendered most unsatisfactory by the maculated cornea. A bright red reflex was obtained by the indirect method, and now and then a peripheral retinal vessel could be made out, but no details of the macula or disc could be seen. There was a dark circular opacity floating in the vitreous of the left eye, which, at first was thought to be a permanent hyaloid artery.

*Vision.*—Owing to the patient's extreme youth and ignorance of the alphabet, figures, or counting, together with his childish indecision and nervousness, the exact amount of vision could not be obtained. It was judged to be about  $\frac{4}{40}$ . The boy could see a watch at 3 meters, and, at close range, he could tell colors and see fine objects which, however, he held very close to the eye, indicating his myopic condition. He plays with his little companions, recognizes them by voice at a distance, and by sight at about 4 meters. In spite of his bad vision, he has the boyish proclivities for romping, as evidenced by the numerous scars on his forehead from falls.

*Retinoscopic examination* with the plane-mirror showed reversal of the shadow at about 14 cm. in the right eye, indicating a myopia of about 7 D.; in the left eye, the reversal took place at a distance of about 12.5 cm. from the eye, indicating a myopia of 8 D. According to these measurements the eyeballs were about 26 mm. long.

*Treatment.*—In view of the apparent stationary form of the disease, the absence of pain, the preservation of vision and the late stage at which the boy was first observed, operation was not deemed advisable. Myopic lenses, 1 D. less in strength than the retinoscopic findings indicated, were ordered and markedly improved vision. Eserin in

solution of 1/4 grain to the ounce was prescribed for daily use in both eyes. The father was instructed to methodically test the vision at short intervals and, at the first indication of decided diminution of vision or the appearance of pain, to bring the child at once to the clinic. In such event, if circumstances warrant, sclerotomy or iridectomy will be performed; perhaps iridectomy first on the worst eye, and if it fails to stay the disease, sclerotomy will be performed on both eyes and will be repeated if necessary.

*Conclusions.*—From the absence of signs indicative of previous inflammation of the interior of the eye, the atrophic or maldeveloped iris, and the abnormal shape and size of the skull, I believe that the increased intraocular pressure in this case is due to congenital defective development rather than to intraocular inflammation in uterus or in early infancy.

#### PATHOLOGIC STUDY OF TWO CASES OF HYDROPTHALMOS.

The sections herein described were cut from infantile eyeballs, enucleated for hydrophthalmos at the Royal Ophthalmic Hospital, London. They were loaned to me by a colleague, who, unfortunately, could not furnish accompanying clinical histories.

The outlines of the sections were carefully traced by me and reproduced in the accompanying diagram. The actual dimensions of the hardened eyeballs have been approximately preserved. The outlines of a vertical section of a normal child's eyeball have been traced and reproduced for purposes of comparison. An attempt has been made to show the thickness of the cornea and iris in Case I. All the sections are median vertical.

*Dimensions of the Normal Child's Eyeball.*—Horizontal base of the cornea, 12.1 mm.; antero-posterior diameter of the eyeball, 22.1 mm.; depth of the aqueous chamber, 3.1 mm.; antero-posterior diameter of the lens, 4 mm.; vertical diameter of the lens, 7.2 mm.; diameter of the optic nerve just posterior to the lamina cribrosa, 4.5 mm.

*Case I. (Fig. B. in the Diagram).*—In this eyeball there were marked evidences of inflammation in the whole

anterior segment. The iris was bound fast to the cornea in the greater part of its surface. The anterior chamber was almost entirely obliterated. Both the cornea and iris were thickened, and the cornea was markedly distorted. The sclera was considerably stretched and thinned. The lens was missing and, most likely, had been dislocated posteriorly and absorbed in the vitreous. The retina and choroid were detached and mostly disorganized. The scleral ectasia was not uniform, and the normal contour of the eyeball had not been maintained during the process of distension. In fact, the whole eyeball was disorganized and distorted.

*Dimensions.*—The antero-posterior diameter of the eyeball was about 28.3 mm. (22.1 mm. normal). The vertical diameter was 25.1 mm. (22 mm. normal). The horizontal diameter of the base of the cornea was 16.2 mm. (12.1 mm. normal).

From the macroscopic and microscopic findings, this case was evidently one of secondary glaucoma due to a congenital iridokeratitis, the elastic sclera of the infantile ball allowing total ectasia (hydrophthalmos), instead of limiting the extension to the region of the lamina cribrosa—the characteristic pathologic evidence of secondary glaucoma in adults.

*Case II. (Fig. C. in the Diagram).*—The marked feature in this case was total absence of any indication of the canal of Schlemm. The eyeball was enormously enlarged in its antero-posterior diameter (30.1 mm.). The vertical diameter was about normal. The aqueous chamber was very deep—4.1 mm. (3.1 mm., normal). There was apparently no marked diminution of the iridic angle, which circumstance is confirmatory of Grahamer's observation. The lens was partially dislocated posteriorly and downward and was shrunken, measuring 3 mm. in its antero-posterior diameter (4 mm., normal), and 6.2 mm. in its vertical diameter (7.2 mm., normal). The iris was atrophic, being much thinner and smaller than is shown in the diagram. Judging from the space between the periphery of the lens and the ciliary processes, the zonule of Zinn must have been much stretched and consequently atrophied, allowing the lens to recede and drop downward. The cornea was

COMPARATIVE DIAGRAM (ACTUAL SIZE) OF A NORMAL CHILD'S EYEBALL AND HYDROPHTHALMOS FROM INFLAMMATION AND FROM CONGENITAL MALFORMATION.

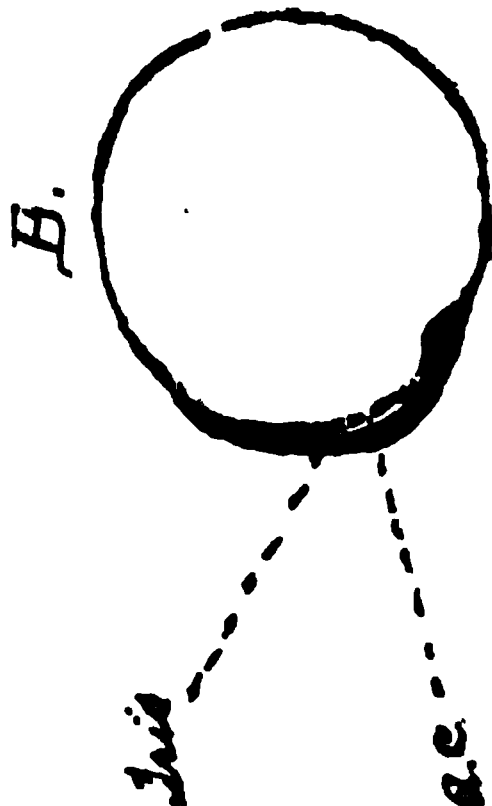
NORMAL INFANTILE EYEBALL.



Measurements in mm.

Base of cornea.....	12.1
Antero-posterior diameter.....	22.1
Vertical diameter.....	22
Depth of aqueous chamber.....	3.1
Antero-Posterior diameter lens .....	4
Vertical diameter lens.....	7.2
Diameter of optic nerve.....	4.5

HYDROPHTHALMOS FROM INTRAUTERINE IRIDO-KERATITIS.



Case I.

16.2
28.3
25.1
...
...
...
...

HYDROPHTHALMOS FROM CONGENITAL ABSENCE OF CANAL OF SCHLEMM.



Case II.

14.2
30.1
22
4.1
3
6.2
...

increased in curvature and measured horizontally across its base 14.2 mm.; it was markedly sclerosed. The vitreous chamber was in a state of disorganization. The scleral ectasia was not symmetric, and the eyeball was much distorted longitudinally.

From the macroscopic and microscopic findings, there is strong reason to believe that the cause of this case of hydrophthalmos was defective development in the region of the filtration canals, rather than inflammatory obstruction or synechiæ.

### SUMMARY.

1. There is an extraordinary state of confusion relative to the nomenclature, classification, etiology and treatment of these cases.

2. The proper name to employ to designate the condition is hydrophthalmos, as this indicates a general condition and not a special cause or local effect. By adhering to such a general name, no error in lexicography is committed, and future bibliographic research is materially assisted.

3. The disease is present at birth or occurs in early infancy, the inception being generally intrauterine.

4. The diagnostic symptoms are uniformly enlarged and protruding eyeball, insufficient lid-action, increased tension, sluggish and dilated pupil, atrophic iris, which appears tremulous if the lens is luxated, peculiar bluish sclera, corneal opacity and anesthesia, deep anterior chamber, restlessness, ill-temper, constant rubbing of the eyes and other symptoms of local pain.

5. The cases generally classed under the name of hydrophthalmos or one of its synonyms are of different origin, and there is evidence in support of all of the following causes: (a) an intrauterine irido-keratitis, causing closure of the periphery of the anterior chamber; (b) congenital lack of development, either in separation of the iris from the cornea, or in deficiency of the filtration-angles in the neighborhood of the iridic angle; (c) a fetal serous cyclitis or uveitis causing excessive secretion with an accompanying diminution in the caliber of the veins of Leber's plexus and obstruction of the spaces of Fontana;

(d) vascular disturbances producing arterial hypertension and trophic disorders.

6. Notwithstanding the several plausible theories, careful pathologic study seems to indicate that these cases may be divided into two classes:

- I. True hydrophthalmos, depending upon congenital defective development of the cornea, iris or filtration channels.
- II. Hydrophthalmos secondary to fetal intraocular inflammation, usually in the form of irido-keratitis or irido-cyclitis and keratitis, causing closure or obstruction of the iridic angle and the filtration-channels.

7. The prognosis of early operation in hydrophthalmos is far more favorable than the textbooks lead us to believe.

8. If a case of hydrophthalmos is recognized in the first few months of infancy and shows no diminution of progress under several weeks of palliative treatment with iodids, mercurials and miotics, repeated paracentesis should be tried. These failing, a broad iridectomy should be performed at once on the worse eye, unless the eyeball is very large, when repeated sclerotomies should be substituted. Sclerotomies failing in a medium-sized eyeball, iridectomy ought to be tried.

9. The earlier the operation the better will be the result. Late operations are dangerous because of the loose or dislocated lens, tenuity of the membranes, and disorganization of the vitreous. Prolapse of the vitreous and intraocular hemorrhage are the special dangers. The more patulous the filtration canals, the more likelihood there is for successful operation.

10. Miotics should be invariably used as adjuncts to operation.

11. The increase of the antero-posterior diameter in hydrophthalmos produces myopia, and the associate corneal disease is likely to cause irregular curvature or astigmatism. In cases giving evidence of useful near vision, whether operated upon or not, an attempt at correction of the refraction by retinoscopy and ophthalmometry, with confirmation by the test-lenses, is strongly advised.



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## RETINITIS CIRCINATA.

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ILLUSTRATED.

Since Fuchs, (*Archives f. Ophthal.* Volume XXXIX, 3, page 229,) in 1893, described twelve cases of what he called retinitis circinata, a number of other cases have been reported. Various theories have been advanced to account for the white spots but these remained pure surmises until Ammann, (*Archives of Ophthalmology*, XXVII, page 203), had the opportunity of making an anatomical examination in a case which at one time had presented a typical picture of retinitis circinata though the patches had run together and did not present a typical appearance at the time of the patient's death. Then, too, she had a trace of albumin in the urine which is exceptional, as it was found in only one of Fuchs' patients; and she also had glaucoma in this eye. Ammann came to the conclusion (*ibid*, page 213) that "the white spots are brought about only and alone by fat cell clusters, and further, that these appeared where formerly hemorrhages had been found, but only at a time when nothing more of the hemorrhage was to be seen at that point."

He published a bibliography of the cases reported up to that time and it might be well to add several additional ones. de Wecker (*Annales d'Oculistique*, 1894), reports having seen fifteen cases out of 150,000 patients, and de Wecker and Masselon (*Ophthalmoscopie Clinique*, 2nd edition, figure 41), give a drawing of a case. J. B. Lafford (*Transactions of the Ophthalmological Society of the United Kingdom*, Volume XVI, page 87), reports a case and presents an excellent typical colored drawing and in

the discussion that followed Priestley Smith speaks of having seen one case. In the same volume W. G. Laws reports a case, as does also G. Hartridge, who gives a colored drawing. This evidently, however, is the case referred to in Ammann's list. It was a somewhat doubtful case, and in the Transactions for 1898, (Volume XVIII, page 170), he states that in his patient the white patches had entirely disappeared leaving simply a pigmentary disturbance of the macula. Haab (*Atlas und Grundriss der Ophthalmoscopie und Ophthal. Diagnostik*) gives an excellent colored picture (figure 60) of a case. Dr. Friedenbergs case (Transactions American Ophthalmological Society, 1897, page 181), of which he presents a drawing, differs somewhat from the other cases in appearance; while that of E. C. Fisher (Transactions Ophthal. Society, United Kingdom, 1898, volume XVIII, page 167), with good colored plate differs in that the macular region is unusually free of all changes or disturbance.

As this list, incomplete as it may be, would indicate, little is to be found in American literature on the subject and I therefore take this opportunity of reporting a case which has been under my observation for more than five years. Unfortunately, it does not throw any definite light upon the obscure point, the etiology of the disease, but as a typical example I wish to report it with a drawing which represents fairly well the picture seen with the ophthalmoscope.

E. L. B., age 37, first consulted me January 15th, 1894, concerning his eyes, with the history that he had been near sighted as long as he could remember, but that in the past two years his sight had failed very much and quite rapidly. He contracted syphilis about two years before and was of the opinion that his sight had been worse since that time. He never suffered with headache and had no pain in the eyes. Vision O. D.  $3/45$ , O. S.  $4/45$ . The ophthalmometer indicated in O. D.  $1\frac{1}{2}$  D. of astigmatism axis 15, and in O. S.  $2-2\frac{1}{4}$  D. axis 150—165. Retinoscopy revealed an amount of astigmatism entirely at variance with the reading of the ophthalmometer, as follows:

O. D. —  $1.50s\subset$  —  $4.00c$  axis 15.

O. S. —  $1.50s\subset$  —  $4.00c$  axis 165.







With these glasses V. O. D. = 5/22, O. S. = 5/15. The ophthalmoscope showed in each eye a narrow circle large in diameter, of what I then supposed to be retino-choroiditis surrounding the macula. The macular region itself was decidedly granular in each eye. The outer limits of the form fields were normal and no scotoma was present in either eye. At that time he was given mercury and a little later potassium iodid in addition.

After two months I lost track of the patient and did not see him again until December, 1897. He then reported that his eyes had seemed better until the past year, but that during the last six months especially they had failed considerably, though they do seem better at some times than at others. Vision with the glasses was 2/45—a very marked deterioration since his former visit, almost four years before. He had gotten glasses from another oculist (O. D. —4.00 axis 15, O. S. —5.00 axis 165), but no change in them made any improvement in his vision. He was then using some tobacco, three to six cigars daily, and informed me that he had smoked much more heavily even within the past year. He was a bartender by trade, but said that he drank very little. He was advised to stop entirely the use of both tobacco and alcohol. Examination of the urine showed neither albumin nor sugar present. The outer limits of the form field were normal and, in fact, the color fields were also practically so. In the right eye there was no scotoma, but the color perception was diminished and he could not distinguish the small red (1 1/2 mm.) spot at all, while in the left eye there was a small central color scotoma for blue, the small red spot was recognized only below fixation and the small green spot not at all. Thomson's yarns showed his color perception uncertain between the greys and light pinks. The pupils were equal and responded to light. The condition of retinitis circinata was now fully recognized.

OPHTHALMOSCOPIC EXAMINATION: O. D. Media are clear, disc is round with physiological cup, edges are hazy, especially above and below and slightly irregular. Surrounding the macula is a circle or rather a slight ellipse with the longer axis in the horizontal direction, three or four times the disc in diameter, white in color,

somewhat lustrous in appearance not unlike the exudate seen in albuminuric retinitis. The circle comes within about one-fourth diameter o. d. of the disc. It is narrowest at this inner portion where it is also most brilliantly white and shows some breaks in it. Down and out, the circle becomes slightly wider, while above it is fully  $1/2$  diameter o. d. in width. The lower edge of this wide portion is sharply defined, while the upper fades gradually into the adjoining retina. This portion is not so densely white. The retinal vessels pass over the circle in various places without any interruption. The macula forms the center of the circle or ellipse, and is marked by a dark red spot, looking somewhat, and yet not altogether, like a hemorrhage. Within the entire circle, but most marked just about the macula, there is decided choroidal disturbance and, in fact, this exists to a considerable degree throughout the fundus with excess of pigmentation in the spaces between the choroidal vessels. Refraction, MAs. O. S. presents a similar condition. The circle is broken on the inner side and would, if completed, just touch the disc. It is possibly not so densely white as in the right eye. It is narrow below as in the other eye but a little more broken, and broad above. The macula is granular but does not show such marked changes, and nowhere throughout the fundus is there anything looking like a hemorrhage. The disc is slightly oval at 90, its edges are more irregular and slightly hazy with a ring of choroidal pigment out, and a slight amount of pigment on the inner side. To the nasal side of the disc is another whitish line like that composing the circle, slightly concave toward the disc and about  $1/2$  diameter o. d. from it, extending from a point slightly below the center to the level of the upper edge of the disc. The accompanying picture which was drawn by Miss A. Cleveland (3/31/98) shows very well the condition presented at this time. The vision at this date was O. D. 6/45, O. S. 6/30? not improved by any change in glasses. The patient then disappeared again and I did not see him until February 16th, 1899. Vision with my correction as given above O. D. 3/45, O. S. 4/45 not improved by any change in glasses. He has been unable to read since last fall, though he says his eyes have been worse in this respect some days than others. Now

he cannot read Jaeger No. 10, not even with a strong spherical added. He has smoked very little during the past year and used very little alcohol, only an occasional glass of beer. His general health is very good save some nasal catarrh. Examination of the urine shows as before neither albumin nor sugar. The heart is normal, but there is slight accentuation of the second aortic sound. The movements of the eyes are normal, the pupils equal and respond to light.

FIELDS O. D.—Form, out 80, up 50, in 55, down 60.

Blue, “ 70, “ 30, “ 45, “ 40.

Red, “ 70, “ 30, “ 25, “ 40.

Green, “ 60, “ 30, “ 22, “ 32.

FIELDS O. S.—Form, out 70, up 50, in 55, down 60.

Blue, “ 60, “ 35, “ 45, “ 35.

Red, “ 60, “ 35, “ 35, “ 35.

Green, “ 25, “ 30, “ 30, “ 30.

There is no scotoma but he cannot make out the small color spots at all and the color sense is slightly diminished. The ophthalmoscopic appearances are practically the same as a year ago, except that possibly the changes within the circle are not so pronounced and the dark red spot in the macula is not so conspicuous. Five years ago his vision seemed to improve somewhat under potassium iodid and a year ago under potassium iodid and strychnin, though I confess I was, and still am, very skeptical of the beneficial influence of any treatment.

In the majority of cases reported hemorrhages have been seen at some time in one or both eyes, but in this patient I have never seen one in the left eye and nothing in the right except the spot directly in the macula which somewhat, though not very closely, resembled an extravasation of blood. All of Fuch's patients were of advanced age, the youngest being 38, and among the other cases referred to above, the youngest was 56, except Weltert's patient, whose age was only 12. I confess, however, that if we are to judge by the picture accompanying his report as compared with all the other drawings, it does not appear to me like a typical case nor was it so in its course which differed considerably from those described by Fuchs, “the difference in the state of the visual acuity at different

times in the course of the process being especially interesting." The age of my patient when I first saw him was 37. In seven of Fuch's patients, only one eye was affected and in those also of Hartridge (doubtful case), Lawford, Spicer, Fischer and Fridenberg. In five of Fuch's cases the changes were symmetrical in the two eyes and so also in Law's patient and my own.

# TYPICAL DIABETIC RETINITIS. REPORT OF TWO CASES.

BY

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That diabetic retinitis is an uncommon affection is well shown in the very excellent paper published in the *Archives of Ophthalmology*, in 1895, by Dr. Dodd, who, in a very thorough review of the literature, was able to collect only forty-seven undoubted cases. Dr. Alt has since increased this number by a report of three cases, and, accepting his suggestion that "we should report all the cases which come under our own individual observation concerning this still debated and debatable subject," I shall report two more.

Hirschberg classifies cases of this affection in three groups:

- 1st. Central punctate, or typical diabetic retinitis;
- 2d. Hemorrhagic diabetic retinitis, characterized by the presence only of small punctiform hemorrhages, and,
- 3rd. A group of atypical cases, which present the typical ophthalmoscopic picture, but, are complicated by the existence of albuminuria.

The typical form is described by Hirschberg as follows:

The optic nerve head is not swollen, nor cloudy and the retina is not diffusely opaque, nor is it oedematous. At the posterior pole of the fundus, especially in the macular region, are found numerous whitish points, spots or stripes, which surround the macula in an irregular manner without forming the regular radiating or star-like figure usually present in the retinitis of albuminuria. These spots commonly appear in small aggregations between the macula and optic nerve head, from the supe-

rior to the inferior temporal vessels of the retina, while beyond these vessels they generally appear as single spots. Some of them may cover small blood vessels, which shows that they lie in the nerve fiber layer. Large white spots are of very infrequent occurrence. These spots appear to remain unchanged for years; their number may increase, yet they never coalesce to form larger plaques or group themselves around the macula in radii. Between the white spots, small hemorrhagic dots may be seen in some cases.

The cases which I shall here describe are, I believe, examples of this so-called typical variety.

CASE 1. Mr. F. C. White, aged 49 years, consulted me October 14th on account of failing vision. He had always been a healthy individual and did not remember to have had a day's sickness. During the hot spell of last August he noticed while at work in the field that it was becoming difficult for him to see the farm hands as well as formerly, and, about that time he complained of a feeling of soreness about the eyes, as if there were sand in them. For a short time he was troubled by diplopia, but this soon disappeared and was followed for a time by difficulty in judging distances. For instance, in attempting to pour milk into his glass he would miss it and pour the fluid upon his plate, or, in attempting to grease the wagon axle he would discover that he was holding the oil can two or three inches from the point intended.

His brother, who is a physician, advised him to consult an oculist, but instead of doing so he visited an optician and was promptly furnished with a pair of glasses. These he tried to use for a little more than a week, but not being able to see any better with than without them he threw them away.

On ophthalmoscopic examination I found the right eye normal, but the left presented at the temporal margin of the disk a number of fine yellowish-white dots, and the vicinity of the macula was occupied by a round, white, atrophic patch crossed from above by retinal vessels, while near by were three small hemorrhagic spots. There were no further changes apparent in the retina and the nerve head and vessels appeared to be normal. To his surprise, on covering the right eye his central vision in

the left was found to be practically nil. He was able to count fingers at only two feet. An effort was made to take his field with a perimeter, but central fixation was so poor that it could not be done with any degree of accuracy; except for the central scotoma, however, the field seemed good.

A specimen of urine was furnished next morning and on examination I found the following: specific gravity, 1,015; color, light brownish-yellow; reaction, slightly acid; no trace of albumen; but, a little less than 2 per cent. of sugar.

The presence of sugar was determined by the indigo-carminic and picric acid tests and the quantity estimated by the latter method. A drop of blood was then taken from the lobe of the ear and a positive reaction obtained with the Bremer method, indicating the presence of sugar in the blood in abnormal amount. The diagnosis of diabetic retinitis was clear. This patient had supposed he was in perfect health. He had no great amount of thirst, his appetite was good, he was not obliged to urinate frequently—not more than three or four times in twenty-four hours, and, he was not aware that the amount of water passed during that time had shown any increase. He had for some months, so I learned from his brother, been rather depressed and melancholic, but beyond that, and the diplopia, which was probably due to temporary paresis of the ocular muscles, nothing abnormal had been noted.

He was at once put upon a rigid diet, and, since then his general condition has improved. Of course no improvement in the eye is to be expected, and in fact, when I saw him last, a week ago, the central atrophic spot seemed to have increased somewhat in size. The right eye, which at the first examination seemed to be perfectly normal, now shows, between the disk and the macula, a number of the characteristic small whitish dots. There are no hemorrhages and no discoverable changes about the disk or vessels.

Case 2. This case I was permitted to see through the kindness of Dr. Osler. The patient, Mr. T. O., white, aged sixty years, was admitted to the Johns Hopkins Hospital on November 24th, 1898. He stated that in February,



1895, he first noticed ringing noises in the head, and about the same time became aware that he was compelled to urinate very frequently, sometimes having to rise four or five times during the night. The amount of water passed during the twenty-four hours was about one gallon, and he has averaged about the same amount ever since. He visited the Johns Hopkins Dispensary at that time, and the records show that the diagnosis of Diabetes Mellitus was made on finding a large amount of sugar in the urine. At first he was very thirsty, but for six months past has not been so affected. He has lost about thirty pounds in weight, is weak and has a poor appetite. At the time of admission to the ward last month, the urine contained about 1 per cent. of sugar and the Bremer test of the blood was positive. There was no albumen.

On December first, I made an ophthalmoscopic examination and found the following conditions:

Left eye. The fundus is of light color and the chorioidal vessels and pigment show very distinctly, especially in the nasal and lower portions. A few small, yellowish-white dots are grouped about the superior nasal and temporal veins. The macular area, the disk and the blood vessels are all apparently normal.

Right eye. In the right eye where the disease is more advanced, there is the same grouping of yellowish-white dots about the vessels in the upper half of the field, but the dots are more numerous. There are no dots in the lower half, but three or four, rather larger than the others, are seen just external to the macula, and close to the nasal side of the disk are some fine, white striations. There are no hemorrhages and the disk and vessels are of normal appearance.

His sight has been scarcely, if at all, affected by the retinitis, for with his glasses, + 1.50 Ds, he has vision 20/30 — with each eye.

## THE CRISIS IN BINOCULAR VISION.

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The Board of Education of New York City has under contemplation the advisability of instituting regular and periodical examinations of the eyes of the children of the public schools. We are on the verge of a practical realization of the vast and far-reaching importance of an early recognition of the conditions of sight in our children, and of the influence of vision in the economic problems of the coming generations.

Some years ago I published a paper ("The Influence of the Eye on Character and Career," N. Y. Med. Journal, Feb. 16, 1895), in which I strongly advocated legislation providing for regular and periodical examinations of school children's eyes, with a view to securing in a most suggestive and practical way a wide and powerful influence over the early development and progress of the young. For, can it be doubted that a child found to possess a more or less pronounced vicious eye-tendency, (for example, myopia, or imperfect binocular vision), might be wisely counseled so that the energies being expended upon an occupation which he is pursuing and for which he may be ill-fated (so far as sight is concerned) might be turned into another and more probably successful channel? To illustrate: A mother asked me today, "Will it do for my daughter to learn the trade of dressmaking?" I examined this girl's eyes and found myopia. What would be the natural result? She would spend some years, perhaps, at learning and in pursuing her art, only to be obliged later to abandon it, and then find it difficult to rearrange her life to advantage. Would not a life as a houseworker, or children's nurse, or at any calling not requiring near use of the eyes be far more likely to meet with success?

In the paper to which I have alluded, I devoted myself chiefly to myopia and to the importance of regular examinations of children's eyes. In this article I wish to call special attention to the matter of binocular vision and its important bearing upon the economics of every-day life.

By "binocular vision" is meant simultaneous vision of both eyes and without qualification usually signifies single vision; in other words, binocular single vision is the normal function of our eyes so far as their harmonious adjustment and simultaneous operation is concerned. Binocular vision is possible primarily through supremacy of the "fovea;" secondarily, to competency of the functional activity of the brain. The "squint" in many young infants, for instance, is due to the fact that they have not at once established binocular fixation, which, when accomplished (probably through mental development), leads in time, to binocular single fixation, from an inherent natural endeavor to overcome diplopia or double vision. The mental development which brings about this binocular vision can be attributed to the fact that our other senses do not confirm the findings of diplopia, and therefore by adjusting our visual lines in such a manner that the "supremacy of the fovea" can operate to convey retinal impression to the brain which projects in unity whatever falls on symmetric retinal areas, do our eyes enable the brain to fuse diplopic images, so as to conform with the testimony of our other senses.

The only great importance of binocular vision is readily comprehended when one reflects upon its two-fold function or privilege of perspective perception (stereoscopic vision) and comprehension of environment (orientation); for the relations of environment must be comprehended and all that is exhibited through perspective perception must be understood in order to secure the protective purposes of human life and economics of well-being and development, or we must perforce be inadequately defended from the adventitious or greatly limited in a utilitarian sense.

But important as bodily safety may be, it is the exercise of stereoscopic vision or perspective perception that plays a part of inconceivable importance. Our estimates of dimension, location, distance, our ideas of subjective

and objective orientation (relations of objects to ourselves and to each other), depend upon binocular vision. The two eyes do not singly see what the pair sees--each eye views an object from a different point of observation, owing to the fact that they are separated, and therefore, by comprehension of different surfaces, convey to us our idea of form, size, distance, etc. These images of complementary surfaces, as in the stereoscope, are fused; this act being in the case of the eyes a cerebral act, while in the stereoscope the result is purely physical, accomplished by the prisms in the instrument. Thus are conveyed to the mind those impressions which, from the cradle to the grave, we learn to interpret in all their significance. This magnificent function, with all that it implies, with its infinite variety of meaning, is the privilege of those of us who use both eyes in the simultaneous and harmonious act--binocular vision. If this binocular vision is so important and far-reaching in its influence, what then must be the deprivation, unconscious or otherwise, but a serious obstacle in manifold ways nevertheless, of him who has either never had or has lost this function! And what must be the incalculable profit to him to whom it is restored!

Now to what condition is the absence of binocular vision largely due? What condition is commonly to be charged with the want of this very important function? It is strabismus. And I wish to show that it is possible, possible far oftener than I believe it to be understood, to restore binocular single vision to those afflicted with strabismus; and to try to awaken the profession in general to the importance of early warning parents that to their cross-eyed children may be vouchsafed the inestimably valuable privilege of simultaneously using both eyes, and that the chance to recover this function is either lost or greatly impaired by delay. Also, that straightening the eyes, surgically, for cosmetic purposes, is not only not the all-important matter from an economic standpoint, but that the only way to maintain with any degree of certainty the desired good looks lies in securing binocular vision.

But it may be argued that binocular vision cannot be secured when an eye is amblyopic. This depends somewhat upon the nature of the amblyopia. I am a believer

in congenital and acquired amblyopia and divide strabismus cases into those related to or accompanied by congenital and those of acquired amblyopia. If I am asked, how is this distinction determined, let me say that it is true we are sometimes in doubt—but that many cases of amblyopia are acquired is a matter of common observation. A given case, say, of a child who “squints” as soon as he begins to use his eyes more or less continuously at short range is very likely, we may readily conceive, to be associated with congenital amblyopia; but no one can deny that a strabismus coming on as a result of a lesion, e. g., paresis may be followed by a suppression of an image in the “squinting” eye, to avoid the distress of diplopia, a more or less permanent amblyopia resulting.

Now while it is difficult and often impossible to learn invariably what cases are due to congenital, and what to acquired, amblyopia, the lesson, nevertheless, which I wish to set forth is comprehended in this theorem: *That it is important to spare no pains in the endeavor to secure binocular vision in all cases of strabismus and that, contrary to the usually accepted dictum, it can be accomplished in a surprisingly large number of instances, and that it would be, were sufficient pains taken and patience and judgment exercised.*

I admit the question is still unsettled as to whether the amblyopia is the cause or the result of the strabismus. I do not care to venture at this time upon this ground, but I do call attention to the indisputable fact that in any diseased condition, while we strive to remove the cause, it is in order always to eliminate any contributing evil influence.

To restore or create binocular vision I have a fourfold method: (1) Correct all errors of refraction; (2) Practice orthoptic exercises; (3) Perform tenotomies and advancements; (4) Refine with orthoptic exercises.

(1) I think no one will deny that errors of refraction are an underlying basic etiologic factor, especially in connection with amblyopia, in strabismus, and that they have a pernicious influence, equalled only by the beneficial action of their correction. While there is little doubt that hypermetropia and myopia play an important role in the cause of strabismus, it is certain that experience shows most gratifying results whenever the correcting lenses are em-

ployed. Why is this? Is it not because the eyes, stimulated by the innervating impulses of better vision, are induced now to play a part nearer normal than they were capable of doing hitherto? Is it not true that any organ relieved of a load performs in better fashion its functions? The amblyopic eye is stimulated by aid of a corrected vision, even though slightly improved in degree of sight, to enter upon the exercise of the function which is its inherent tendency and natural right. Add to this stimulus, the generally conceded idea that the over-accommodation or focussing required of a far-sighted (hypermetropic) eye tends to cover convergence, or to divergence in the relaxed accommodation of myopia, and the conclusion is inevitable that relief from these conditions may naturally be sought, in part at any rate, by the relief of the tension of the one case (hypermetropia) through convex lenses, or by the stimulation to the exercise of the ciliary muscle ensuing in the other myopia, just as soon as the eyes are optically placed upon a normal plane through the application of correcting lenses. Therefore as a first consideration in the management of strabismus, the existing errors must invariably be carefully corrected. This is the foundation of strabismus work, and must never be overlooked or neglected. So true is this statement, that it is well known that many cases of strabismus, if undertaken early enough, require no further treatment to secure parallelism and binocular vision. And right here let me repeat, no eyes are straight or remain so except through the possession of binocular single vision. Should we fail, however, to secure the desirable result by these means, we at least accomplish one thing. We eliminate a disturbing factor.

(2) In the next place, before resorting to surgery, every conceivable plan should, on general principles, be employed to bring out the presence or possibility, be it ever so fleeting, at this juncture, of binocular vision. With the correcting lenses before the eyes, the candle-flame with prisms or Maddox rod, in the phorometer, colored spectacles and stereoscopic tests should be brought into service. The smallest sign of recognition of double images should be noted and encouraged, and when recognized, then daily orthoptical exercises should be practiced.

Of the stereoscopic tests one which I find satisfactory is

the "Stereoskopische Bilder (of Kroll) für Schielende," published by Leopold Voss of Hamburg, Germany. These pictures are used in an ordinary "stereoscope," and represent component parts, also duplicates (partially so) of various scenes, letters and objects, and by means of which each eye can see only a portion, but in which a complete picture is seen as soon as binocular fusion takes place as the result of mental stimulus. I add various prisms to the stereoscope in order to add a calesthenic feature. Of course, it must be borne in mind that binocular single vision is not easily obtained where one eye is markedly amblyopic, as in corneal opacities or where congenitally defective. This paper refers especially to eyes of at least fair vision and where there is no great visual disparity. Nor does this paper concern paralysis, but rather deals with insufficiency and strabismus. And hence it will be pertinent to warn against the deceptive appearance of apparent deviation, for oftentimes the axes of vision do not coincide with the seeming visual lines. To resume, I exhaustively and patiently persevere in orthoptric stereoscopic exercises, including calesthenics personally supervised, and can declare that a happy result can most assuredly be obtained in many instances, apparently hopeless, especially where their use has been early enough employed.

(3) But it is certain that a great many patients show no sign of recognition of double images, especially in instances of strabismus (non-paralytic). In such cases I am convinced of the efficacy of a resort to surgery. But here let me emphasize that it is not alone the cosmetic, but the economic effect of binocular vision, that is to be sought—and that the former will be far more certainly attained if the latter is restored. For the natural tendency of the stimulus of binocular vision is toward binocular single vision, and in the latter is secured the finest possible cosmetic effect, finest because natural. The essential feature of surgery in this class of cases is to endeavor to bring the fovea within the arc of possible foveal fixation. Formerly, when I heard a patient say after tenotomy for strabismus that he saw double, it disturbed my peace of mind very considerably. Now I hail it as the best possible sign, a most hopeful indication. For let me repeat, the tendency of eyes with diplopia is to become straighter, depending



upon the degree of deviation and the stimulus. I try to contribute toward this favorable tendency by carefully estimating the kind and degree of the deviation and by careful surgical readjustment.

Now as to the forms of surgical interference, I am convinced that so far as possible the site of muscular insertion should be disturbed as little as consistent with the ends in view. The leverage impulse or power is seriously impaired oftentimes by such surgery as permits a muscle to re-insert itself too far back, resulting in great limitation in the motor excursions. Therefore I am coming to believe that more "advancements" and fewer simple "tenotomies" should be performed. The tenotomy is a simple procedure and in this fact lies its seductive charm. The advancement is more delicate and difficult, but is, I believe, more scientific, because it does not greatly disturb the site of insertion of the muscle involved. Landolt, in the "*Archives d'Ophtalmologie*, Paris, Oct., 1898, declares that tenotomies must give way to advancements, and Panas, in the same journal for July, 1898, describes a tenotomy designed to secure all the benefits of muscular section without disturbing the site of insertion.

(4) However, I do not consider my work is finished after operation until I have patiently and persistently for a long time regularly stimulated the eyes by these exercises to develop binocular single vision, and insisted upon the wearing of correcting lenses.

During the last two or three years I have carried out in private practice these principles on a score or more individuals with a view to demonstrating the truth of my theorem and with a degree of success that is encouraging. (See table.)

When we stop to reflect on the importance of binocular single vision we are not scientific if we abandon clearly defined principles, if we do not exhaust every device to arrive at the inestimable boon of this function. Binocular single vision is an ever accompanying factor in human usefulness, happiness and success. It is far-reaching in its beneficent influence, contributing in an infinite variety of ways to that world of subjective and objective orientation which is the embodiment of untrammelled physical



vision, as a clear brain is in the exercise of mental insight and inspiration.

Twenty-four cases of binocular vision restored or maintained:

Number.	Name.	Sex.	Age.	Deviation.	Refraction Vision.	Operation.	Binocular Vision Before.	Diplopia After.	Orthoptic Exercises.	Result.	Remarks.
1	B.	M.	8	Period Converg.	Each + 3 D. 20-50	Tenotomy internus.	No.	Yes.	No.	Yes.	Eyes straight.
2	B.	F.	4	"	+ 5 D. V. - ?	"	?	?	No.	Eyes Straight.	The child's eyes have remained so.
3	B.	M.	4½	"	+ 4 D. V. - ?	"	?	?	No.	"	The child's eyes straight, presumes binocular single vision.
4	C.	F.	16	Perman't Converg.	A. H. V. - 20-30 Each	" twice.	No.	Yes.	No.	B. S. V.	Eyes straight.
5	C.	F.	26	"	A. H. R. 20-15 L. 20-100	" twice.	No.	Yes.	Yes.	B. S. V.	Later, L. V. - 20-70. Result satisfactory.
6	D.	M.	20	"	H. 20-40 o. u.	" thrice.	No.	Yes.	No.	B. S. V.	Probably his right extern. was cut by an inju.—refuses glasses.
7	E.	F.	9	"	H. V. - 20-20 o. u.	Tenotomy L. Internus	No.	Yes.	Yes.	B. S. V.	Eyes Str. Uses glasses at school.
8	H.	M.	21	"	A. H. R. 20-15 L. 20-40	Tenotomy Internus & Sup. Rect.	?	Yes.	No.	B. S. V.	Eyes straight.
9	H.	F.	12	"	A. H. A. 20-15 L. 20-100.	Tenotomy Internus.	No.	No.	Yes.	No B. V.	Disparity accounts for this.
10	L.	F.	11	"	A. H. 20-20 o. u.	Tenotomy L. S. R. R. I. R.	Yes.	Yes.	No.	B. S. V.	Eyes straight.
11	S.	M.	43	"	E. 20-20 o. u.	Tenotomy Internus.	No.	Yes.	Yes.	B. S. V.	Eyes straight.
12	S.	M.	2	"	Refused.	"	?	?	No.	Strai-ght.	Presumably B. S. V.
13	S.	M.	5	"	A. H. 20-30 o. u.	"	No.	Yes.	No.	"	Presumably B. S. V.
14	U.	F.	9	"	+ 6. D. R. 20-60. L. 20-100.	"	No.	Yes.	Yes.	B. S. V.	B. S. V. on fixation. Pat. has had cataract (needlings) has nystagmus.
15	W.	F.	16	"	A. MX. R. 20-20. L. 20-50.	Tenot. R. I. R. L. S. R. L. I. R. Adv.	No.	Yes.	Yes.	B. S. V.	L. V. has Impr. to 20-40 + & was a special case of orthoptics.
16	C.	F.	22	Diverge't Strabis.	A. MX. R. 20-50. L. 20-30.	Tenotomy Externus.	Occas-ional.	Yes.	No.	B. S. V.	Later, B. S. V. maintained.

17	L.		24	"	A. MX. R. 20-100 L. 20-40.	Adv. I. R. Ten. E. L.	"	Yes.	No.	B. S. V.	Eyes straight.
18	L.	M.	5	"	A. H. 20-30 o. u.	Adv. R. I. R.	No.	Yes.	No.	B. S. V.	Sometimes di- plopia.
19	M.	F.	34	"	M. R. 20-50. L. 20-20.	Teno. R. E. " L. E. " R. I.	Yes.	Yes.	Yes.	B. S. V.	She has a poste- rior synechia.
20	M.	M.	24	"	A. H. R. 20-200. L. 20-10.	" R. E. " L. E.	No.	Yes.	No.	B. S. V. ?	Under Observa- tion.
21	N.	F.	23	"	A. H. 20-20 o. u.	Adv. R. I. L. I.	No.	Yes.	Yes.	B. S. V.	Under Observa. Sometimes Di- plopia.
22	S.	F.	30	"	A. H. 20-30 o. u.	Adv. L. I.	No.	Yes.	Yes.	B. S. V.	"W a s once cr- osseyed"—"had two operations"
23	W.	M.	29	"	E. R. 20-70. L. 20-20.	Teno. R. S. R. Adv. L. I. R. " R. I. R.	? Diz- zy.	Yes.	No.	B. V.	Diplopia subsi- ding, eyes get- ting straighter.
24	S.	M.	26	"	A. H. R. 20-200. L. 20-20.	Adv. R. E. R. Twice.	No.	Yes.	No.	B. S. V.	B. S. V. in spite of disp. He had formerly been operated upon for conv. strabis- mus.

TWO CASES OF UNILATERAL TOTAL OPHTHAL-  
MOPLEGIA; CROSSED HEMIPLEGIA BEING  
ASSOCIATED WITH THE OCULAR  
PARALYSIS IN ONE CASE.\*

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R. T., aged 30, railroad employee, brought to the Polyclinic Hospital on July 7th, 1898, came under the observation of Dr. L. W. Steinbach, to whom the writers are indebted for the privilege of studying and reporting the case. While intoxicated he had received a punctured, transverse wound in the lower lid of the right eye from the thrust of an umbrella ferrule. When he was brought to the hospital he was unconscious, his muscles were relaxed, the skin was blanched, the extremities were cold, and the heart's action was weak—results of the injury and partly, perhaps, of alcohol. A few minutes after his reception he could be roused sufficiently to answer questions. He was put to bed, and to quiet his extreme restlessness and complaints of pain, morphia and bromides were given.

The ragged linear wound in the lids were just above the margin of the floor of the right orbit. No fracture of the bony floor or walls could be detected. The left side of the face was paralyzed, ptosis was complete on the right side, the right eye was slightly prominent and immovable by any voluntary effort. He had absolute ophthalmoplegia of all the external and internal muscles of the right side. The pupil was moderately dilated and irresponsive to the stimulus of light or convergence. Accommodation was abolished. Indistinctness of outline of the margin of the disk (indicating commencing edema of the optic nerve) the fundus had undergone no change. Subsequent examinations made while the patient was in

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the hospital showed no improvement in the ocular conditions excepting a subsidence of the edema. About 6 months after the accident, on Dec. 27, the muscles of the exterior and interior of the eye had regained to a great extent their normal power. Some restriction of movement in all directions, a partially dilated and sluggish iris, and inability to read fine print were still evident. Diplopia, the eye symptom that was prominent from the first, continued in all parts of the binocular field, although the separation of the false and true images was less marked.

Shortly after the accident the left side of the face and the left arm were noticed to be paralyzed and the left leg paretic. Paroxysms of severe pain in the distribution of

**The Dark Area Indicates the Anesthetic Zone.**

the ophthalmic branch of the right fifth nerve occurred several times daily during the first two weeks, and perhaps a little longer. At the expiration of that time T. was referred to Dr. Spiller's clinic. During that period he had had perversion of the sense of smell, i. e., he perceived peculiar odors as of something burning, for example, when none existed, and he had numbness in the fingers of the left hand, but no disturbance of micturition.

July 21.—Slight flexion of the left forearm and slight elevation at the left shoulder were possible; the movement of the left fingers and wrist was insignificant; the gait was paretic, the left leg was dragged, the left knee-jerk was excessive, ankle-clonus was marked on the left side, the station was normal, the tongue was protruded in median line, the skin was anesthetic only in the distribution of the upper branch of the right 5th pair, but was pares-

thetic toward the boundaries of this region, causing the symptom of pressure as from a tight band. No note was made of the sensation of the right eyeball, although it was doubtless examined. In the distribution of the ophthalmic branch of the fifth nerve the patient had the condition known as *anesthesia dolorosa*. This was due to loss of function in the portion of the nerve peripheral to the lesion, and to irritation of the portion central to the lesion.

The patient stated, and the statement was confirmed by the resident, Dr. Sutton, that when he yawned the left arm was raised involuntarily at the shoulder, the left elbow and fingers were flexed, and the left leg was unconsciously raised. The associated movement was especially evident in the morning in consequence of frequent yawning at that time.

Aug. 27. The left leg, which regained power quite rapidly, was still weaker and trembled after walking, the entire left side of the body perspired more freely than the right, and the left hand was somewhat edematous. The power of elevating the right upper lid and of turning the right cornea upward and downward was partly restored, but lateral movements and contraction of the iris and ciliary muscle on the right side were still wholly in abeyance. Paresthesia at the periphery of the supraorbital nerve still persists.

Sept. 10. Power had, in large part, returned to the left arm and hand but the leg remained as in August. It was subject to involuntary stiffening when about to perform an unusual action, such as a long step or a step upward or downward; the ocular muscles were gradually recovering their functions. The left knee-jerk was still much exaggerated.

Dec. 24. The movements of the left arm and leg were improved but still impaired. Flexion at the left elbow was good but contraction of the affected muscle was restricted. The resistance of the left arm to passive movement was less than that of the right. When the patient yawned the left fingers now opened fully and the hand was extended and the forearm flexed at the elbow. The associated movement in the left lower limb was no longer pres-

ent; the reflex action of this limb was still exaggerated. The left hand seemed to the patient to be always cold.

A consideration of the history and symptoms of this case in which we have paralysis of the 3rd, 4th, the ophthalmic division of the 5th and the 6th nerve, with a transitory perversion of the function of the 2nd, leads inevitably to the conclusion that the umbrella tip penetrated the right orbit and injured these nerves at the point where they lie close together, namely, the sphenoidal fissure. The escape of the optic nerve from injury shows that its site, above and to the inner side of the sphenoidal opening, was not invaded. We can hardly imagine a lesion that would produce complete paralysis of all of the orbital nerves, except the optic, unless it were situated at the sphenoidal fissure, where these nerves are close together. The exophthalmos, noticed at first, was probably produced by the complete paralysis of all the external ocular muscles and the loss thereby of the muscular tonicity. After the muscular power was, in a measure, regained the exophthalmos entirely disappeared.

The man was paralyzed on the side opposite to that on which he had ophthalmoplegia. This is proof that some injury occurred either direct or by the extravasation of blood, to the structures within the cranial cavity, and as the paralysis was crossed the lesion must have been above the motor decussation in the medulla oblongata. The temporary paralysis of the left 7th nerve indicated that the lesion was above the decussation of the 7th nerve, and must therefore have been above the lower part of the pons. It is not improbable that motor fibers at the lower part of the right internal capsule, or within the right cerebral peduncle, or the upper part of the right side of the pons were injured, but as objective sensation was normal in the paralyzed hand the lesion was not a deep one, and probably did not involve the sensory tract. The very considerable restoration of motion 6 months after the accident shows that the motor fibers were pressed upon and not destroyed, possibly by extravasated blood, or possibly by a spicule of bone.

The transitory perversion of the sense of smell is an interesting symptom indicating temporary involvement of

the olfactory nerve, perhaps merely as a distant result of the blow.

The associated movements in the left limbs when the patient yawned are worthy of note. Such movements are well-known and are called by the Germans "Mitbewegungen." V. Monakow devotes considerable space to the subject in his recent work on cerebral pathology (von Monakow, *Gehirnpathologie*, p. 331). Six months after the accident, associated movements were noticed only in the left arm, but they had changed in character. When the man yawned the hand and fingers became fully extended, instead of flexed, and the forearm became flexed at the elbow. No thoroughly satisfactory explanation has ever been given for these associated movements, although the attempt has been made. It is very certain that all connection between the paralyzed limbs and the cerebrum cannot be destroyed when the associated movements occur, and it seems also certain that the muscles, which by their contractions produce these movements, receive certain impulses from the cerebral centers at the time the intentional or reflex movement in other muscles is inaugurated.

Associated movements occur under normal conditions. A very excellent example, and one at present much discussed by certain French and German writers, is found in the rolling upward and outward of the eyeball when the lids are voluntarily closed. This phenomenon has been recently described by Bordier and Frenkel, and Bonnier, as an unrecognized symptom of facial paralysis, but Bernhardt has pointed out that it was fully recognized by Sir Charles Bell about sixty years ago. A number of papers have been written recently on this subject (Bordier and Frenkel, Bonnier, Bernhardt, Köster).\*

A somewhat similar case to the one we report, but due to an entirely different cause, was described recently by James Hendric Lloyd.†

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\*Bordier and Frenkel *Semaine Med.*, No. 42, 1897.

Bonnier, *Gaz. hebdomadaire*, No. 91, 1897.

Bernhardt. *Berliner Klin. Wochenschr.*, No. 8, 1898, and No. 48, 1898.

Köster, *Münchener med. Wochenschr.*, No. 38, 1898.

†Lloyd. *Annals of Ophthalmology*, Jan., 1898.

A second case of traumatic unilateral ophthalmoplegia was seen in Dr. Hansell's service in the Jefferson Hospital. A laborer in a rolling mill received a severe blow on the inner third of the supraorbital ridge on the left side, from a large piece of flying steel. At the time of the examination, several days after the accident, there was a marked depression at the site of the injury, indicating fracture of the anterior plate of the frontal sinus without rupture of the skin and without nasal or mental symptoms. The patient had partial loss of vision, diplopia and total inability to move the ball. There was anesthesia in the region supplied by the supraorbital nerve above the depression in the bone. Ptosis was not present. He had no power of rotation of the left ball in any direction; he had dilatation and immobility of the pupil, loss of accommodation, clear media, edema of, and numerous hemorrhages into, the retina. During the few days the man remained under observation no improvement in his symptoms was noted. As he was unable to speak English, details of the accident and the immediate symptoms could not be learned.

The loss of sensation in the skin on the left side of the forehead is explained by injury to the nerve at its exit from the orbit, and the total internal and external ophthalmoplegia by orbital hemorrhage and exudation from subsequent inflammation of the orbital tissues.



# TUMORS OF THE BRAIN.\*

(With reference to Disturbances of Vision.)

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The subject of Brain Tumor is one of much interest both from a scientific as well as from a practical point of view. One must be sure of the location and pathological character of the neoplasm in order to give in any degree a satisfactory prognosis or to follow any correct course of treatment.

Much has been learned concerning how best to locate these growths since the experiments on cerebral localization made by Fritsch and Hitzig, now nearly twenty years ago. We know now that tubercular growths are the most common of all; that they are liable to be multiple; at least twenty per cent. of the cases are multiple, and that they are usually located in connection with the meninges and about the large vessels so that they are more commonly found near the surface or at the base of the brain than deep within the organ. They may be found, however, in any part of the brain. They are more frequent in childhood and are usually secondary to tuberculosis of other organs, but may be primary. From the fact that they may be multiple and surrounded by tubercular infiltration both in the brain and its membranes most authors discourage surgical interference, but Horsley advocates removal when they can be located near the surface.

There is a question as to which form of growth occurs next in frequency to tubercle—sarcoma, glioma or gumma. Starr places sarcoma as second in frequency. These growths are usually incapsuled and are probably the easiest of all to remove by operation. They are rarely

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\*Read before the Milwaukee Medical Society, February 28, 1899.

secondary to sarcoma of other parts and are only multiple when they appear as melanotic nodules which are rare in the brain. They grow rapidly and produce well marked symptoms. They are not vascular and are more frequently found in the cortex and cerebellum than in any other parts, but may develop in any portion of the brain. The round cell and spindle-cell sarcoma are more frequently found in the brain than the myxo-sarcoma or the glio-sarcoma and of all tumors of the brain this variety has constituted the majority of successful cases of removal.

Glioma of the brain is usually primary, but occasionally develops secondarily to glioma of the retina. They are rarely well defined or separable from the brain tissue, hence are exceedingly unfavorable for operation. All gliomatous tissue has a tendency to undergo fatty degeneration and break down and liquefy so that some authors have maintained that all cysts found in the brain, not the relics of previous hemorrhages or of embolic softening, are due to gliomatous formations. Gliomata are more frequently found in the white substance of the brain, than in the gray matter, but they may appear in any part of the brain. They are very vascular and destroy the brain tissue annihilating both nerve cells and nerve fibres and the delicate vessels within them may rupture and produce apoplectiform attacks. Glio-sarcoma is not very frequent and like glioma the cells are infiltrated through the brain tissue. They are rarely incapsuled and like glioma are much more difficult of removal than sarcoma.

Gumma, in my own experience, has been more common than sarcoma or glioma. They are, of course, very rare in childhood and never result from inherited syphilis. They may develop within a year of the original infection or as late as twenty years after the disease was acquired, and many appear as the only apparent evidence of tertiary syphilis. They grow rapidly and also subside rapidly under specific treatment. Starr relates a case where the patient was perfectly well in nine months. Its favorite position is at the base of the brain as a rule, but may appear anywhere in the membranes. "The occurrence of nocturnal headache and insomnia of an obstinate character in any case presenting the symptoms of a brain tumor will suggest the probability of a gumma" and as it is possible

for any suspected brain tumor to be a gumma, it is always advisable to place the patient on specific treatment for a period of not less than six weeks to two months, in order to eliminate its possibility.

Tubercle, gumma, sarcoma, and glioma are by far the most frequent varieties, pathologically speaking, of tumors of the brain which are met with. The other varieties are rare, and some of them are extremely rare. Most authors lay down cancer as coming fifth in order of frequency and of all intra-cranial growths cancer, of course, is the most unpromising for surgical interference. They usually appear secondary to malignant growths in other parts. Gray gives the following order of frequency of these neoplasms:

Tubercle, sarcoma, glioma, gumma, carcinoma, parasitic-cysts, fibroma, osteoma, enchondroma, myxoma lipoma, angioma, neuroma, adenoma, cholesteatoma, actinomyces, and aneurism.

Other than the four first mentioned, as stated before, these neoplasms are extremely rare and very difficult of diagnosis. The fibroma, if it can be located in a favorable position and diagnosed, is, of course, easy of removal. Also the lipoma which is so rare that it is hardly worth while to mention it.

"Tumors of the pituitary body are not so very uncommon and are usually of the nature of fibroma or myxoma." It has been claimed, as you know, by some that growths of this body always produce symptoms of acromegalia, but in a number of instances of this disease I have failed to find any evidence of tumor, but it is generally conceded that a relationship between the two does exist.

While intra-cranial aneurisms present some features of tumor of the brain, they are small and appear upon the larger arteries at the base and upon the Sylvian arteries. They increase in size more rapidly than ordinary brain tumors or than aneurisms elsewhere and usually rupture early. A murmur audible to the stethoscope on the head has been supposed to be pathognomonic of aneurism of the brain, but a distinct murmur has been heard over the Sylvian region in case of excessive softening and where no aneurism existed.

The classical symptoms of tumor of the brain are persistent headache, cerebral vomiting, and double optic neuritis. There are other symptoms which are almost as characteristic of tumor as the three named, namely, vertigo, and perhaps convulsive movements together with changes of disposition, insomnia, and decreased mental power. The headaches are persistent and may be located in any part of the brain and its location is not indicative of the location of the growth. Gray lays great stress upon the character of headache in making a diagnosis of gumma. He terms it a "quasi-periodical headache, either nocturnal or at some stated time of the day, and obstinate insomnia; the headache and insomnia disappearing upon the super-vention of any convulsive or paralytic symptoms. But it is in the early period of the headache, when it is only accompanied by obstinate insomnia and before superven-tion of convulsions or paralysis that the diagnosis must be made." The vomiting is of the cerebral character, inde-pendent of taking food. and usually projectile. It is more frequently observed in children and may or may not be accompanied by nausea. It is claimed that double optic neuritis is present in 80 per cent. of the cases. There may be a marked degree of optic neuritis without any impair-ment of vision, but when the patient shows impairment of vision or limitation of the visual field for colors or for light or is becoming blind, it will be found that the optic neuritis or optic atrophy is fully developed. It is usually double though it always appears first in one eye and is rarely equally intense in both. In a few cases it has been found in one eye only. It appears earlier and is more constant in tumors situated in the cerebellum, the corpora quadrigemini and upon the base and basal gang-lia than in the cortex or centrum ovale. Vertigo usually occurs independent of vomiting and is excited like vomit-ing by being suddenly disturbed or by change of position. It is more frequent with tumors in the posterior fossa, the cerebellum or pons, or on the base involving the auditory nerve than with tumors elsewhere. Insomnia may be due to the intense headache or to disturbances of the cerebral circulation. Convulsions are more liable to occur as an early symptom in children, but may be also a first symptom of tumor in adults. General convulsions may occur from

tumors situated anywhere and have no significance as a diagnostic symptom of location, but convulsions of a Jacksonian type of course are suggestive of cortical disease and frequently may aid us in locating the growth. Changes in the rapidity and rhythm of the pulse indicate intra-cranial pressure, and a slow and irregular pulse is the form usually noted, but toward the close of life, it may be very rapid, and an irregular or Cheyne-Stokes respiration occurs as a terminal symptom. Polyuria and glycosuria, when they develop, indicate intra-cranial pressure, and they have also existed in small tumors of the medulla as an evidence of irritation of the vagus nucleus.

Focal symptoms are of considerable importance. Where there is mental inactivity, forgetfulness, lack of judgment, irritability of temper with perhaps stupidity and change of character, together with the general symptoms, it is very significant of growth in the frontal convolutions and in the cortical portion. According to Ferrier these symptoms are usually well marked in tumors of the frontal cortex and subjacent white matter. They are not present in growths lying upon the base of the frontal region on the orbital bone, and they rarely appear in tumors in other regions of the cortex until at the last stage of the disease. These tumors in the frontal lobe also frequently produce irritation of the cortex which may extend back to the central region or to the motor region and we may have localized spasms, paraesthesia, and paralysis, and it is always well to bear in mind this function of irritation, which seems to act like a pebble thrown upon a lake producing a ripple which extends a considerable distance, and the growth may be located some distance from the origin of the spasm or paralysis. "Tumors situated in the third frontal convolution of the left hemisphere in right handed persons, and of the right hemisphere in left handed persons, produce motor aphasia together with agraphia, the patient being able to understand language, either written or spoken, but unable to give expression to his ideas." It is well to bear in mind that aphasia is less complete in brain tumor than in apoplectic conditions. This undoubtedly is due to the slow progress of the neoplasm.

Tumors located in the motor area of the brain give us

the best and most distinctive symptoms as to location, as we have the Jacksonian convulsions usually resulting from these growths and although, as stated before, tumors located elsewhere in the cortex may produce an irritation which results in some of these symptoms, yet they are rarely as distinct and well marked as when the growth appears strictly within the motor area.

It is of great importance to determine whether or not a tumor is situated in the cortex, for one located in this region is within the easiest reach of the surgeon's knife. Authors differ as to the possibility of distinguishing whether a neoplasm is located in the cortical or subcortical portion of the brain, but in the majority of instances a tumor in the motor area, no matter how small, will give rise to occasional convulsive seizures at the earliest stages of the disease, whereas, if located beneath the cortical substance or in the subjacent white matter and gradually extending into the cortex proper, paralytic symptoms will occur long before they give rise to the symptoms of cortical irritation, which consist of convulsive seizures as these are purely a matter of irritation of the cortical cells proper. If headaches have increased with the development of convulsive symptoms the inference is that tumor has grown from beneath the cortex into the latter. Then again, it is well to bear in mind that tubercles, gliomata, and, above all, gummata, are most certain to begin near the surface, while sarcomata and cysts are as often subcortical as cortical in origin. It has been claimed by some that diminished mental strength or disturbance of the mental functions occur as a symptom in nearly all forms of brain tumor, but it is well known that the frontal lobes may constitute silent areas of the brain and tumors in this region have occurred without giving rise to any distinct localizing symptoms. Frontal headaches have been known to occur with occipital tumors. If the tumor extends downward and involves the olfactory bulb the sense of smell may be diminished or lost, but of late years it has generally been conceded that if there is much impairment of the psychic functions, such as mental defect, apathy, stupor, or some well defined psychosis, a suspicion of frontal tumor may be entertained, but Oppenheim, who has summed up the entire subject very carefully, believes

that we are not justified as yet in accepting this as a safe guide in focal diagnosis. If the course of the growth gives rise to symptoms which indicate its proximity to the motor areas, the situation of the tumor in the frontal lobes can be inferred with much more certainty, and especially if it is on the left side in right-handed individuals, where the symptom of aphasia is present and gradually increases in character. If located on the right side, and the person be right-handed, it is extremely difficult to be positive of the location; however, if the patient has developed convulsive seizures after paralysis has been present for a while it is pretty strong evidence that the tumor is located in the subjacent white matter and is pushing its way upward toward the surface and has invaded the cortical portion. If the symptoms should develop in the right half of the face, or in the right upper extremity, associated with aphasia, the probability of the tumor's being located in the left hemisphere is very great. A pretty distinct set of focal symptoms are recognized with tumors of the motor area.

Beginning with the portion of the anterior central convolution, next to the fissure of Sylvius, are located the parts representing the movements of the tongue and face; above this, those of the thumb, fingers, hands, arm, shoulder, and the leg in the order mentioned. The upper third, roughly speaking, of the motor area governs the movements of the leg; the middle third the movements of the upper extremity, and the last third those of the face and tongue. In the last third also there are centers governing the throat, gullet, and jaws. There is a specialized thumb center in the middle area, and in the upper third is the center for the hips, knees, foot, and toes, and the large toes have specialized centers. These centers it must be remembered, govern movements more than they do muscles. In using electrical tests by applying the electrodes to definite and well circumscribed small areas we can succeed in eliciting definite movements, as for instance, of the angle of the mouth. In a case which occurred under my observation in a Philadelphia hospital, under the care of Prof. Dercum, where an operation was performed to see if anything could be done in a case of epilepsy of a Jacksonian type, an electrode being applied



to a circumscribed area over the leg center, after the skull had been opened, the pia mater being intact, the exact convulsive movements of the leg were produced that occurred by attacks of the disease, which showed distinctly how easily it is to find the center of convulsion in these cases and proves conclusively the location of the center.

Cortical epilepsy is the most characteristic symptom of tumor in any part of the motor area—that is to say, convulsive seizures affecting the part governed by the diseased area, and it may come on with or without loss of consciousness. These convulsive seizures are developed in a definite order. The first part affected indicates the special area in which the disease is most marked. From this part the irritation spreads to neighboring areas, and thus the convulsive movements may gradually affect the entire body, as for instance, if a tumor is located in the arm center, twitching movements of the fingers or wrist will be first noticed, and these may spread either to the face or to the leg, or by degrees involve the opposite half of the body. Consciousness is lost in the majority of cases, but it may be preserved during the entire attack. Ofttimes these convulsive seizures are very slight, or they may be severe. They may be repeated at short or long intervals, from one every few days to as many as forty or fifty per day. Remissions also occur which are very misleading. In one case reported a complete remission lasted for three months. This was in a case of a large glioma. Convulsive seizures usually occur in the early period of the disease, while the tumor is acting as an irritant upon the cortical substance. After the substance has been destroyed by invasion of new growth, these symptoms subside, but the paralytic symptoms, denoting complete destruction of cortical substance, supervene. These paralytic symptoms are likely to persist in the form of a monoplegia. Macewen and Keen report cases in which the extensors of the big toe, and the muscles of the thumb, were the only parts paralyzed for some time. In connection with general symptoms these strictly localized symptoms of paralysis and numbness of limited parts indicate the exact site of the tumor. In a given case, however, where general symptoms have existed for



a long period and a partial Jacksonian epilepsy has developed much care must be exercised in locating the tumor for it is more than probable that it has invaded the motor area secondarily, and its beginning may have been in a distant part of the brain.

According to Dana, Starr, and others, parietal tumors are more apt to cause sensory than motor symptoms. These tumors may give rise to distinct localizing symptoms in consequence of their proximity to the anterior and posterior central convolutions. It is claimed by Ferrier that the center of vision is located in the angular gyrus, and that by involvement of the white tract of Gratiolet, which passes from the internal capsule to the occipital lobe, we have produced bilateral homonymous hemianopsia. By extension of a growth to the left inferior parietal lobule word blindness will be produced—the patient cannot read and write at will, though he will be able to write by dictation or to copy written words. Wernicke claims that the conjugate movements of the eyes are governed by a center in the inferior parietal lobule, hence, a distinct impairment of this one function, if this be true, would indicate a growth or lesion in this region.

Growths in the occipital lobe are recognized by disturbances of vision which is included under the term hemianopsia, loss of vision on one-half of the retinal field. We are to remember that each occipital lobe is connected with one-half of each eye, and a growth located in this region is characterized by bilateral homonymous hemianopsia without any other special symptoms; but we must also remember that a lesion anywhere in the optic tract or optic radiations will produce hemianopsia as well as in the occipital lobe. But if a growth be situated in the tract or radiations we are apt to have associated with the hemianopsia motor, sensory and pupillary symptoms; these symptoms are not apt to exist with tumor confined to the occipital lobe. While it is claimed by Ferrier that the center of vision is located in the angular gyrus, the researches of Nothnagel, Seguin, and others, point to a great degree of certainty that the cuneus is the actual center of vision, and if this be so, in a case where hemianopsia is the chief symptom, we must consider that a growth is located on the median surface of the occip

lobe and gradually extending to the outer surface. It has been proven, however, by Hanschen that a lesion in almost any part of the occipital lobe, if large enough to compress the white matter underneath the occipital cortex may produce hemianopsia, and this is a reasonable conclusion as well. In some of these cases of occipital tumor we also meet with that strange symptom termed psychic blindness—the patient sees objects but is unable to recognize what they are, or to what use they can be put. In cases of tumor of the temporo-sphenoidal lobe we may expect hearing to be impaired, but not abolished on side opposite the lesion, and sensory aphasia will be present. The patient is able to speak spontaneously and correctly, but is not able to understand what is said to him, and of course, not able to repeat spoken language. By crowding neighboring parts of the brain, a tumor in this location is very apt to produce motor aphasia as well as paralysis of the face, tongue and lips. It is also liable to give rise to complicated speech disturbances, especially if the tumor be located in the left temporal convolution in right handed individuals; but cases have occurred in which the same symptoms have been produced by disease of the right temporal lobe. Fortunately tumors are not very common in this locality.

Tumors of the corpus callosum are not at all common, and in the majority of cases observed the symptoms have been chiefly general symptoms. As our knowledge of the function of this body is very imperfect it is evident that it is very difficult, if not impossible, to positively diagnose a growth in this location. Bristowe and others have attempted to make out a distinct set of focal symptoms in addition to the general symptoms. They speak of slight paresis of the opposite side of the body, dysarthria instead of aphasia, and the occurrence of imbecility, the latter as a positive symptom.

Tumors of the basal ganglia are not rare. To distinguish these from cortical lesion we note absence of convulsive symptoms and the development of a large series of special symptoms with relatively few general symptoms. For a long time hemichorea and hemiathetosis were supposed to be almost pathognomonic of the lesion of the thalamus, but it is now considered doubtful if these symp-

toms have any localizing value, but if the general symptoms point to a location in the interior of the brain and not in the cortex, the presence of these two symptoms is sufficient to warrant the diagnosis of the lesion in or near the thalamus. Many symptoms have been noted in connection with some of these tumors and absent in others. Also many symptoms have been noted in connection with them that are also noted in connection with tumors in other localities. They most always produce pressure upon the internal capsule, through which pass the most important motor and sensory tracts, hence motor symptoms are more common in cases of tumor of the corpora striata, and sensory symptoms in cases of tumors of the optic thalami, and when the tumor invades the posterior part of one thalamus, hemianopsia is an invariable symptom. It is, however, quite sufficient to be able to distinguish whether these growths are in the center of the brain or in the cortex, as, if located in the former position operation is out of the question and their exact location does not make so much difference.

Tumors of the crus cerebri produce oculomotor symptoms, with paralysis of motion and of sensation in the opposite half of the body. There will be ptosis of the eye and paralysis of all the external muscles except the rectus externus and the superior oblique. If the tumor becomes large, as both peduncles are so close to one another, it may affect both sides, and as the growth increases the symptoms become bilateral.

In cases of tumor of the corpora quadrigemina there are a few special symptoms which denote their location. This is due principally to the relation which the corpora quadrigemina bear to the visual function and to the connection between the former and the cerebellum, hence we have loss of pupillary reflexes, nystagmus, vertigo, and a condition resembling cerebellar ataxia.

Tumors of the pons and medulla give rise to a multiplicity of symptoms as can be readily understood when we consider the anatomy of this region. While motor paralysis may be unilateral it is often bilateral, and if a growth is located in the upper half of the pons it may give rise to hemiplegia of one side of the body with involvement of the third and fifth nerves of the opposite side. If the

tumor be in the lower half, the fifth, sixth, seventh, and eighth nerves will be more or less involved, and we will have paralysis of the rectus internus and of all the branches of the seventh nerve in one-half of the face with loss of hearing in one ear. These cranial nerve symptoms will be on the side of the lesion and opposite to the hemiplegia. If the lesion is near the surface and away from the nucleus it will involve the root of the sixth nerve and result in paralysis of the rectus externus muscle of one side, but it will not affect the conjugate movements of the opposite side. If the sixth nerve nucleus is affected there will be produced a distinct paralysis of one rectus externus muscle, and paralysis of the conjugate movements of the eyes towards the side of the lesion. If the growth enlarges and presses upon neighboring parts a variety of symptoms may be developed.

Tumors of the cerebellum are frequent and give rise to a more distinct set of symptoms. Tubercles and gliomata are the most common forms of tumor that appear in this locality, and among the most important symptoms is the inability to maintain ones equilibrium. Staggering is usually one of the earliest symptoms but that form of in-coördination which is described as cerebellar ataxia, or reeling gait, or cerebellar titubation is by far the most characteristic symptom of cerebellar tumor. The ataxia is characterized by a tendency to reel or to fall to one side, but the patient may also fall backwards or forwards. The direction, however, which the patient is in the habit of falling generally remains the same throughout the course of the disease. Sometimes patients are unable to stand even for an instant unsupported, and in extreme cases, when lying in bed are not able to raise the head without great discomfort. In addition to this ataxia there is marked tremor, bearing a resemblance to the tremor of multiple sclerosis, but having a more ataxic character. Paralysis is a common symptom in this form of growth and it may be in the form of a hemiplegia affecting the opposite side of the body or of complete paraplegia, both the upper and lower extremities being affected. The face generally escapes unless the tumor is situated latterly and presses directly upon the facial nerve. There may be other symptoms but it is unnecessary to consume time in

describing them, as those already referred to are sufficient.

In spite of the many symptoms which occur in connection with tumor of the brain, it is not so very uncommon to find cases where absolutely no symptoms exist and the tumor is not expected until found on the autopsy table, and other cases in which the symptoms are not sufficient to warrant or even suggest the presence of the growth, and even this may occur when tumors are of quite large size. A case came under my own observation, which partly illustrates this point. October 14, '96, a patient called at my office, referred to me by Dr. W. F. Malone, complaining of pain in the back of the head and neck, with attacks of partial but not complete unconsciousness, but at first he thinks he was unconscious for a few moments. Sexual power was noticed to be lost early. Reflexes normal; no girdle or other spinal symptoms; no pain in the legs; in good flesh; a large appetite; uses tobacco moderately; used to drink to excess but does not now; family history good; father killed in the war, mother died of typhoid fever; has a brother and sister alive and well; patient is married; has four children all well; denies specific disease. These attacks of headache come on several times daily and a peculiar sensation in his head which amounts to a partial loss of consciousness also occurs several times daily. He experienced one of these in my office but there was nothing to be observed during the attack. He states that he feels badly. The paroxysms that he has begin in the back of the head and neck and pass up over the head and down the back giving a peculiar feeling. He sleeps well. I was unable to arrive at a diagnosis in this case. There was no vomiting, no complaint made with vision; and nothing but the headache and sensations in the head that would suggest tumor. He came to my office four times, the first visit being made October 14 and the last Nov. 17 the following month. At the last visit he stated that he felt better, except that he was having attacks of facial neuralgia on the right side which he thought might be due to bad teeth. Sometime in December, the next month, I was informed that he died with all the symptoms of cerebral tumor. I did not learn where this tumor was located, or what was its pathologic character.

The majority of these tumors develop in a very insidious fashion and intermissions and complete remissions occur with all forms of these growths. Tumors of the brain are almost invariably fatal and they usually run their full course within a period of about two years. Cases have been reported that have lived for seven to ten years. Others in which death occurs in a few months from the time of the onset of any symptoms.

As to treatment it is always advisable, I believe, to give the patient the benefit of any doubt that may exist in regard to the specific nature of the neoplasm, and at least six weeks to two months should be devoted to specific treatment to clear up that point. Cases of this kind are so common that it would seem that this would only be the safe course to pursue. Is it possible that any other than a gumma will yield to treatment in so far as to have the disease stayed in its progress if not cured? The following case would seem to indicate that such is the fact. Mrs. E., 32 years of age, married, living in the interior of the state, was referred to me by Dr. W. H. Washburn, and seen first on January 3, 1898. She entered the Presbyterian Hospital on the same day for treatment. Prior to this she had consulted Dr. H. V. Würdemann on account of loss of sight. He found that she was totally blind in the left eye and had been for three months. Vision in the right eye, counting fingers at three meters; central vision preserved; field of vision contracted, especially to the temporal side, and practically hemianopsia; no color perception, everything is gray. Has a history of a blow on the head by an ax, and a kick on the chin by a horse when she was young. Both knocked her senseless. Left eye has contractile pupil and reaction to light; no accommodation. No scars visible. Left arm and leg muscles affected with slight motor paralysis; also slight degree of anaesthesia on the left side. Left arm also affected with a clonic spasm, aggravated when attention is called to it and on attempting to do anything. No atrophy. Severe headache; vomits more or less. Knee jerk exaggerated, more marked on the left; ankle clonus on the left side; has gained from 95 to 120 pounds during the past six months. No specific history; no evidence of it in any form. Children are perfectly healthy, the youngest child 18 months old.



Diagnosis of tumor of the brain was made, probably glioma, located on the left side in the subcortical portion beneath the leg and arm center, with probable hemorrhage that affects the optic fibres and accounts for the blindness that came on suddenly. The prognosis grave. Began treatment with the iodid of potassium 10 grains in Apollinaris water four times daily, increased gradually; for headaches, she was given antipyrin 10 grains, citrate of caffein one grain in capsule every three or four hours as needed; a light but nutritious diet. Soon after the patient entered the hospital she became totally blind in both eyes. After remaining six weeks in hospital the headaches were much relieved and partial sight returned in the right eye. She was taking 200 grains of iodid daily and increasing it. At this time she left the hospital for her home in the country. May 4, 1898, right eye, sight pretty good; improving every way; is getting 240 grains of iodid of potash in Vichy water daily. May 25, examined by Dr. Würdemann. Totally blind in left eye from optic nerve atrophy; improvement in right. Otherways improving. Is getting 300 grains of the iodid daily. July 27, 1898, is getting 400 grains of the iodid daily. Shortly after this the stomach rebelled and the iodid was discontinued and she was given a week of rest, when she commenced again with ten grains, rapidly carrying it up again to 400 grains. I saw her last on December 20, 1898. She has increased much in flesh; headaches entirely gone; she can see with the right eye to go about without a companion. The hyperaesthesia, paralysis, and clonic convulsion in the arm have nearly ceased. Certainly there was apparently an arrest of progress of this disease, and I am yet unable to satisfy my own mind whether it was a case of glioma or gumma but I am strongly inclined to the opinion that it was the former.

“In a series of 100 tumors in the Museum of Guy's Hospital, Hale White found 10 which might have been removed safely. Mills and Lloyd also said that in their collection of 100 cases there were 10 which could have been operated upon. Knapp found 2 in 40 cases, and Dana states that in 5 of 29 of his cases the tumor could have been removed. Starr in analyzing 600 tumors states that 37, that is about 6 per cent., could have been removed, but these figures do not cover a very accurate idea

of the surgical possibilities of the future, for many of the cases were observed at a very late period."

It must certainly be recognized for the present that tumors at the base of the brain and in the interior cannot be reached by the surgeon. Surgeons are more inclined to operate and neurologists are inclined to discourage operation. Keen stated in a discussion which I had the pleasure of hearing before the American Medical Association that he believed we should operate in every possible case as by that means we should gain an experience and possibly improve to that extent that the operation would be more successful. It is pretty safe to say that at the present time only about six or seven per cent. of the cases of brain tumor are of a character or in a position where an operation is possible or advisable, and of the cases operated upon, thus far, about 47 per cent. have been successful. Sarcoma and fibroma are the most favorable for operation, and operations should be performed early, certainly within six weeks or two months after a diagnosis is made, and after the matter has been cleared up by medical treatment as to whether the growth is of a specific nature or not.

The subject is a great one, and one which cannot be very satisfactorily treated in one short paper. I have very briefly touched upon some of the most important points relating to brain tumor, and have simply scanned the literature of the present day in a very brief and somewhat imperfect manner. In conclusion I would like to report a case which shows the great difficulty of a diagnosis between brain tumor and abscess of the brain. Mr. H., about 38 years of age, married, was seen by me first in consultation with Dr. Franklyn J. Tower on September 18, 1898. The following history was obtained: The patient began to fail over a year ago; began with weakness; lost 38 lbs. up to two or three months ago; since then has not lost any. He resides out of the city; came in a few days ago to take baths, etc. He was found in his room in his hotel, where he had been unable to get up for an indefinite period of time; some stated forty-eight hours. When found he had had an involuntary discharge of semen, and was in a flood of urine passed involuntarily. He was unable to remember and had some degree of agraphia; he



could make figures when they were suggested to him but every third or fourth was made with much difficulty. He repeated some words over again. Though clear in intellect he could not say what he wanted to.

He was removed to the hospital and his family sent for, and I saw him in consultation with Dr. Tower and his family physician, who had accompanied his wife to the city. The night before he had had a bad attack of semi-unconsciousness and his case seemed very desperate. He has rallied much since then but cannot say what he wants to. Is in bed and cannot walk; reflexes normal; no sensory symptoms, though he is unable to state about his taste. The grasp of the hands is weak, the left considerably less than the right. He has had much headache for a year. It came on first in the night and has been severe. It is located over the top and front and over the left side. Has had some slight discharge from the left ear but has paid no attention to it, thinking it of no moment. Hearing apparently not affected. He vomits some at times; vomiting accompanied by nausea, so he says, as nearly as we can make out, but he states that he does not vomit much. Urine still passed involuntarily; tongue moderately clean, and he eats fairly well. He has been noticed to be failing by his friends for some time. There is no specific history; he has five healthy children, the youngest under a year of age, and his friends and his family physician scout the idea of any specific history. A diagnosis was made of abscess or tumor of the brain, probably located in the inferior or ascending frontal convolution on the left side near the speech center. From the symptoms—loss of flesh, progressive course, headache, vomiting, agraphia, mental condition, slight temperature, his temperature being  $100\frac{5}{10}^{\circ}\text{F.}$ , discharge from the ear, I was strongly inclined to favor the idea of abscess and suggested operation. On the 20th, two days later, I saw him again in consultation with Drs. Tower, Gill, of Madison, and Ochsen, of Chicago. We all agreed to the diagnosis of abscess of the brain, and also agreed to the location, probably in the lower part of the inferior frontal convolution, and the operation was agreed upon. The patient seemed some brighter at this visit, and it was learned for the first time that there had been considerable sugar found in his urine

during the time that he had lost flesh, but that it had disappeared at the time that he stopped losing flesh. On September 22, the operation was performed by Dr. Tower, assisted by Dr. Gill and myself. A free incision was made in the scalp on the left side, turning down a large flap, and the skull was trephined at the spot where we expected the difficulty. A dull pointed grooved director was passed into the brain in all directions but no pus was found. Another point was trephined a little way and above the first point and the director again passed, in all as many as ten or twelve times, but no pus found. The patient rallied well from the chloroform and the wound was dressed. On October 4, on my return after an absence from the city, I learned that just before the patient was to be removed from the table at the time of the operation, and after I had left, he ceased to breathe, pulse stopped, and it required much effort to resuscitate him, but he finally rallied well. His right side was paralyzed but there seemed to be some improvement in his general condition. There was a slight temperature for a few days but it has been normal since. There has been some little discharge from the drainage tube which was left in but the external wound healed rapidly by first intention. On October 7, I saw him with Dr. Tower when he looked fairly well; had no pain except a very little in his left ear; he cannot talk but appears to be doing very well. On October 23, he had been gradually improving until the night before when he became unconscious; temperature went up to 102° F., much blood and broken down tissue was discharged, and he died in the afternoon. Postmortem showed that our first puncture had been into and through a gummatous growth which was located in that position; there was also another large well defined gummatous growth in the cortical portion of the left side of the brain just anterior to the leg center which we had not suspected. Cause of death was from hemorrhage.

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WHAT AMOUNT OF AXIAL MYOPIA THEORETICALLY PRODUCES EMMETROPIA FOR DISTANCE AFTER REMOVAL OF THE CRYSTALLINE?

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In the April number of the *Annals of Ophthalmology* of this year there appeared a very interesting and instructive article by the learned editor of that journal on the surgical treatment of myopia in which Dr. Würdemann states (p. 173) that, "by the removal of the lens in an eye approximately — 17 D. to — 18 D., emmetropia for the distance is produced," and he adds that "even so recent and so thorough a work as that of Stricker is in error on this point; the same will be found in Donders, Helmholtz and Landolt." He bases his assertions on the calculation of Jackson whom he cites as follows:

"In the normal emmetropic eye (having reference to the schematic eye of Helmholtz) the rays which strike the cornea parallel reach the second lens, the crystalline, converging to a point  $31 \text{ mm.} - 6 = 25 \text{ mm.}$  behind it. They reach the crystalline, then 40. D. convergent. To this is added 20 D., the converging effect of the crystalline, making 60 D. The rays are, therefore, focussed  $1000 \div 60 = 16.667 \text{ mm.}$  behind the crystalline.  $16.667 + 6 = 22.667$ , the antero-posterior axis of the emmetropic eye. If we remove the crystalline lens and replace its effect by adding to the refractive power of the cornea, the refractive power required to be so added is the strength of a convex lens correcting the hyperopia caused by rendering a previously emmetropic eye aphakic. After removal of the crystalline, the cornea would require to have a strength of  $1000 \div 22.667$ , equal 44.12 D.  $44.12 \text{ D.} - 32.26$ , the refraction of the normal cornea, equals 11.86 D., the hyperopia *measured at the cornea* produced by extraction of the crystalline from the emmetropic eye. To correct this

hyperopia the lens placed at the ordinary distance of the lens in front of the eye would be a convex 10.5 D."

"In contrast to the above, let us use the dioptric eye to ascertain the amount of previous myopia necessary for the removal of the crystalline lens to render the eye emmetropic. To give emmetropia after removal the retina must lie 31 mm. behind the cornea. To be focussed upon the retina, rays must leave the crystalline converging toward the point 25 mm. behind the crystalline; that is 40 D. convergent. If they must render 40 D. convergent by the crystalline and its refractive power is 20 D. they must have been  $40 - 20 = 20$  D. convergent when they fell upon the crystalline. They must have been converging toward a point  $1000 \div 20 = 50$  mm. behind the crystalline, which will be  $50 + 6 = 56$  mm. behind the cornea. Such rays must have left the cornea convergent  $1000 \div 56 = 17.86$  D. convergent. If they are rendered thus convergent by the cornea having a refractive power of 32.26 D., they must have been divergent on reaching the cornea, to the extent of  $32.26 - 17.86 = 14.40$  D. *as measured at the cornea*. Such a myopia would be corrected by concave lenses of 17. or 18. D. placed the ordinary distance in front of the cornea. This, then, is the amount of myopia as ordinarily measured and expressed, that can be corrected by removal of the crystalline."

I cannot find the references in the works of Donders and Helmholtz (the pages not being given) and do not have Landolt at hand, but there can be no doubt that both calculations of Jackson are incorrect. Here is the proof:

If we take the schematic eye of Helmholtz and remove the lens, we have an aphakic eye with a corneal radius of curvature = 7.8 mm. and a refractive index = 1.3365. This dioptric system has an anterior focal distance  $f_1 = r/n - 1 = 23.179$  mm. and a posterior focal distance  $f_2 = rn/n - 1 = 30.98$  mm.; both distances being reckoned from the cornea. Now in the schematic eye of Helmholtz the retina lies 22.82 mm. behind the cornea and if, therefore, rays of light from a point  $x$  in air shall focus at the retina the point in air must be conjugate to the point on the retina and we must have  $f_1 - x + f_2 \cdot 22.82 = 1$ . By substituting the values for  $f_1$  and  $f_2$  we find  $x = -64.824$  mm.; that is that the rays in air, which shall focus at the

retina, must fall on the cornea converging to a point 64.824 mm. behind it. If we put a convex lens about 14 mm. in front of the cornea to make the rays convergent, we must choose it so, that its focal distance is  $64.824 + 14$  which is 78.824 mm. This means we must take a lens of 12.68 D. and not of 10.5 D. as Jackson finds. I know very well that usually a + 10 D. lens will suffice in a formerly emmetropic eye, but this lens cannot be calculated from the schematic eye, but is due to postoperative changes, which probably produce a flattening of the globe as the removal of the lens in toto most likely diminishes the equatorial dimensions of the ball.

So much for the first calculation of Jackson. With regard to the second assertion: That axial myopia of about 17 D. theoretically will produce emmetropia, we must remember that in the schematic eye of Helmholtz the anterior and posterior focal distances and also those of any two conjugate points are always reckoned from the two principal points, which respectively lie 1.75 mm. and 2.10 mm. behind the cornea. Now if we have an axial myopia of such a degree that the retina lies 30.98 mm. behind the cornea, that is at the point toward which parallel rays of light would converge in the schematic aphakic eye, we can find the point X in front of the eye, from which rays of light must proceed to focus on the retina of this highly myopic eye, by the formula  $F_1/x + F_2/28.88 = 1$ . Here  $F_1$  the anterior focal distance of the schematic eye is 15.5 mm. and  $F_2$  the posterior focal distance is 20.71. As we must refer all distances to the two principal points we must not take 30.98, but 30.98 minus 2.10, because the second principal point lies 2.10 mm. behind the cornea. We thus find that the conjugate point to a point lying 28.88 mm. behind the 2nd principal point or 30.98 mm. behind the surface of the cornea lies 54.79 mm. in front of the first principal point of the schematic eye or 54.79 minus 1.75 mm = 53.04 mm. in front of the cornea. We find, therefore, that rays of light must proceed from a point 53.04 mm. in front of the cornea in order to focus again at the retina lying at 30.98 mm. behind the cornea. If we want to measure this myopia by a lens at 14 mm. in front of the cornea we must subtract 14 mm. from 53.04 mm. to find the focal distance of this concave lens. We thus see that the focal distance

of the lens must be 53.04 minus 14, that is 39.04 mm., or expressed in dioptries, that the lens must be, —  $1000/39.04$  D. = — 25.61 D. and not about 17 D. as is stated by Jackson.

The cause for the incorrect numbers of Jackson lies, in his first calculation, in the fact that he does not consider that the aphakic eye, unlike a lens in air, has the anterior and posterior focal distances quite different, and in the second calculation that he disregards the thickness of the crystalline lens, which amounts to 3.6 mm. and plays quite an important part in the comparatively small dimensions of the eye. The calculations here given are based on the schematic eye with the latest numbers and the result, therefore, is perfectly correct theoretically. It is true that, as mentioned before, experience seems to be at variance with these calculations; but this of course does not make the calculations wrong, but only shows that by the operation other factors have been introduced, which have to be studied by themselves. It would seem that the postoperative changes bring on a shortening of the globe in the usual operation for high myopia, as is also the opinion of von Hippel, Vacher, Pflüger and others.

## THE DIOPTRIC EYE, AN EXPLANATION.

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From reading the above criticism by Dr. Weiland it would seem that in my paper on "Removal of the Clear Crystalline Lens for High Myopia" published in the *Ophthalmic Record*, Feb., 1898, I may not have sufficiently emphasized the novelty and importance of the suggestion of a new conception of the refraction of the human eye; which I called the *Dioptric Eye* in contradistinction to the conceptions known as the *Schematic Eye* of Listing, and the *Reduced Eye* first suggested by Donders. This lack of distinct emphasis, perhaps, permitted Dr. Würdemann in quoting from my paper,\* rather loosely, to say my calculations were "having reference to the schematic eye of Helmholtz," and this statement has misled Dr. Weiland, who, evidently, has not consulted my original paper, and is entirely mistaken as to the theoretic basis of my calculations.

That paper, by the table quoted below, showed very distinctly the exact relations of the *dioptric eye* to the *schematic eye*, having the dimensions and refractive powers adopted by Helmholtz, in both the earlier and later editions of his work. Let me quote from it somewhat at length, but emphasizing the conception of the dioptric eye by italics.

"Helmholtz. while discussing the refraction of the aphakic eye does not, in his *Handbuch der Physiologischen Optik*, take up the special question of the effect produced by removal of the lens in high myopia, and its difference from the effect (as measured at the cornea) produced in emmetropic or hyperopic eyes.

"Donders (*Accommodation and Refraction of the Eye*, p. 312,) makes only this allusion to it, 'A case even occurred to me, in which the accuracy of vision of distant objects was incapable of improvement by either positive or negative glasses. In this instance, the visual axis of the eye,

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\*This passage was quoted verbatim from Dr. Jackson's article.—  
ED.



emmetropic with aphakia, had actually a length of rather more than 30mm.; and we may assume that so long as the crystalline lens was still present, myopia of about 1-3 (inch) had existed.'

"Landolt (*Refraction and Accommodation of the Eye*, p. 414) is more definite and more misleading. He says, 'The only eyes that do not become hyperopic upon losing the crystalline lens, are those which are myopic 11 D. or more, i. e., eyes which before this loss, already have at least 11 D. of refraction in excess. The removal of the crystalline will render a myope of 11 D. exactly emmetropic while myopia of 20 D. would be changed by it into a myopia of  $20.-11.=9$  D.'

"It is interesting to compare the above statement with Landolt's own figures in other portions of his book. Thus (page 79), he makes the second focal distance of the cornea 31.095mm. That is the distance the retina must lie behind the summit of the cornea to have parallel rays accurately focused upon it by the refraction of the cornea alone. And on page 140, he gives the antero-posterior length of the eyeball having 18 D. of myopia as 30.85mm. and of one having 19 D. of myopia as 31.47mm. That is an eye having 18.5 D. of myopia would be just sufficiently elongated to be rendered emmetropic by removal of the crystalline lens, to have parallel rays focused on the retina by the average refraction of the cornea.

"This existing uncertainty of the literature of the subject, justifies us in going somewhat into detail with regard to the optical effect of removal of the crystalline lens. The determination of this is important in every case for which removal of the clear crystalline is to be considered. While neither very difficult or tedious such determination is not materially helped by either the schematic eye of Listing, or the reduced eye of Donders and others. These deal with the refraction of a single system, the reduced eye with the refraction of a single surface, the schematic eye with the refraction at three surfaces, but reduced to a single set of cardinal points.

"In the problem before us, we have to do with the refraction of two different refractive systems, those of the cornea and the crystalline lens, situated some distance apart; and with the effect of subtraction of one of these

refractive systems. Since problems of this sort have become of actual importance in practice in connection with removal of the clear lens for myopia, it seems proper to introduce for their convenient solution, still another conception of the refraction occurring within the eye.

*"I propose that we regard the refraction of the eye as produced by two infinitely thin lenses, the one situated at the summit of the cornea having a focal distance of 31.mm., about equal to that of the cornea (refractive power equal to about 32.25 D.), the other lens situated 6 mm. back of the summit of the cornea, having a focal distance of 50 mm. (refractive power of 20 D.). Such a scheme might be called a DIOPTRIC EYE. The accuracy with which it represents the average human eye may be seen by comparing these dimensions with those adopted by Helmholtz (*Handbuch der Physiologischen Optik*) in his earlier studies of the subject, and with those preferred in his later work. It will be noticed that the first and second principal points of the crystalline lens really lie within one-fifth of a millimetre of each other, and so nearly 6mm. behind the cornea, that the conception of refraction by the lens at a single principal plane at 6mm. behind the cornea does no violence to the facts.*

TABLE.

	Dioptric Eye.	Helmholtz, earlier.	Helmholtz, later.
Focal distance of cornea.....	31.	31.692	31.095
Focal distance of crystalline .....	50.	43.707	50.617
Depth of crystalline behind cornea. ....	6.	.....	.....
Depth of anterior principal point of crystalline..	.....	5.707	5.726
Depth of posterior principal point of crystalline	.....	5.936	5.924
Length of eyeball.....	22.667	22.231	22.819
Refracting power of cornea.....	32.26	31.36	32.16
Refracting power of crystalline....	20.	22.88	19.75
Total refractive power of eye.....	44.12	44.90	43.82

"The value of this conception of the dioptric eye will appear as we work out the actual change produced in different cases by removal of the second refracting element, the crystalline."

After the above comes the passage quoted by Würdemann, and requoted by Weiland. Having shown that I was trying to illustrate the practical use of the *dioptric eye*, and not making calculations based on the exact Helmholtz

dimensions, I trust that Dr. Weiland will see that I did not make the particular mistakes he credits me with, although in that paper I did overlook Casey Wood's case, the first operated on in this country.

With reference to the *dioptric eye*, I still think it is a conception of the ocular refraction well worth having. The *schematic eye* is a single dioptric system with three refracting surfaces. The *reduced eye* is a dioptric system with a single refractive surface. The *dioptric eye*, with its two infinitely thin lenses situated a fixed distance apart, enables us to deal readily with the effects of removing one of these refracting elements; as the *reduced eye* enables us to deal readily with some other problems of physiological optics. With the more complete grasp of the facts that this conception gives, it is not likely that Von Hippel and others would have put forward the unsupported, improbable explanation of a post-operative shortening of the eyeball, to account for a discrepancy which does not exist. For when the real theoretical effect of removing the lens in myopia is known, it is found to agree substantially with the effect clinically observed. Weiland's figures even contradict the assumption of post-operative shortening, and would indicate slight post-operative lengthening of the eyeball.

The *dioptric eye* does put the crystalline slightly (one-fifth millimetre) too far back, and so underestimates the effect of its removal. But as bearing on its practical accuracy, it may be noted that the changes of refraction from removal of the lens, calculated from it, correspond rather more closely to the clinical observations, than do the changes calculated by Dr. Weiland, and based on the exact dimensions adopted by Helmholtz.

ABSTRACTS FROM CURRENT AMERICAN AND  
ENGLISH OPHTHALMOLOGICAL  
LITERATURE.

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ASSISTED BY

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NEW YORK.

QUARTER ENDING JUNE 30, 1899.

**Follicular Conjunctivitis and Ecchymosis of the Conjunctiva  
Caused by Long Continued Use of Hydro-Chlorate  
of Cocain.**

KOSTER, W., Leyden. (*Ophth. Review*, Vol. XVIII, March, 1899.) The writer has long noticed that after continued use of cocain the blood-vessels of the conjunctiva grow weaker, and that small conjunctival bleedings are frequently the result. The effect upon the vessels is then the reverse of that which is observable at first, their size is increased instead of being diminished. He has also several times observed in patients who had used cocain daily that follicles developed in the upper fornix and in the conjunctiva of the upper lid. The writer relates a striking case of a lady who had been treated by the ordinary means for a slight catarrhal conjunctivitis. As there was no improvement cocain was prescribed for home use. This, after a time, was followed by marked redness of the eyes due to ecchymoses, much pain and the development of follicles in the conjunctiva of both lids. Koster says: "This case has convinced me that cocain can cause follicular conjunctivitis, the characteristic of this special form being the presence of the follicles in the upper part of the conjunctival sac, and especially on the tarsus. . . . It enforces the need for care as to the use of cocain for trivial feelings of discomfort in the eye,

and especially as to giving this drug into the patient's own hands."

**The Theory of Accommodation.**

TSCHERNING, M., Paris. (*Ophth. Review*, Vol. XVIII, April, 1899.) The temporary formation of an anterior lenticonus which Tscherning has demonstrated as occurring during the act of accommodation is deemed by Priestley Smith not to be incompatible with Helmholtz's theory of accommodation: "If Priestley Smith's views were correct, we should expect upon opening a dead eye to find the anterior surface of the lens presenting a conical form. But the contrary is the case. The curvature of the anterior surface is flattened in the middle and considerably increased toward the periphery."

Tscherning studied this question by fitting the eye to be examined in a small porcelain cup and after removing the cornea and iris, placed the eye under a mirror inclined at an angle of  $45^\circ$  and so was able to examine the anterior surface of the lens with the ophthalmometer of Javal and Schiötz. To prevent drying of the surface he covered the lens with a thin layer of oil. In support of his assertion that the dead lens is flattened in the middle and more curved at the periphery a table is given showing the radius of curvature of the anterior surface of the lens at different points measured at intervals of  $5^\circ$  and the keratoscopic images of the center and periphery are reproduced.

**On the Mobility and Position of the Artificial Eye After Enucleation.**

SMITH, PRIESTLEY. (*Ophth. Review*, Vol. XVIII, May, 1899.) The writer, after discussing the present drawbacks in the operation of enucleation and emphasizing several points required for its proper execution, describes a procedure he has used for fifteen months to insure greater mobility of the artificial eye, acting on H. Schmidt's idea who lately advocated making a firm connection between tendons and conjunctiva by means of sutures.

The writer describes his method as follows: "The speculum having been introduced the globe is rotated strongly outward either with forceps, or more conveniently in some cases, by pressing the convexity of a strabismus hook

deeply into the sulcus at the external canthus. A narrow horizontal fold of the conjunctiva over the internal rectus is then pinched up so as to include the subjacent connective tissue and muscle, and a black silk suture is carried through these structures by means of a curved needle. . . . The suture is then tied firmly, but not too tightly. . . . A second suture is applied in like manner to the external rectus. The upper and lower recti may be treated in the same way, but this is of less importance. The enucleation is then carried out. . . . and the conjunctival aperture may or may not be closed by one or more vertical sutures."

The writer feels confident that this method has the advantage over the old, of producing greater motility of the conjunctival bed.

#### **The Use of Direct Sunlight in Examining Eyes with Hazy Dioptric Media.**

JACKSON, EDWARD, Denver. (*Ophth. Review*, Vol. XVIII, June, 1899.) The writer maintains that for certain diagnostic purposes direct sunlight is superior to the light obtainable from any other source. Its intensity gives it a greater "penetrating power" of illumination when the dioptric media are hazy or partly opaque.

To make the ophthalmoscopic examination with direct sunlight the pupil must be dilated or at least unresponsive to light thrown into the eye. He describes how the sunlight may be used and the harmful effects of a too powerful concentration may be avoided. He has used this diagnostic aid for four years without causing unfavorable symptoms in any case. The method has revealed through the clouded vitreous intraocular growths and detached floating retina. It has demonstrated the absence of such growths when the intraocular tension was elevated with the media hazy.

#### **Trachoma Toxins and Antitoxins.**

• SNYDECKER, E. F., Chicago. (*Journal American Med. Ass'n.*, May 6, 1899.) Continuing the subject begun in a previous paper (*Journal*, Feb. 4, 1899), the writer describes his method of obtaining toxins and antitoxins from the "diplococcus of trachoma." He gives the results of injecting the toxins into guinea pigs and dogs, and "watched

with especial interest to see whether the toxins would have any selective action on the mucous membranes, but was unable to determine any at all. One point was of special interest: the fact that the human subject was far more susceptible to the trachoma toxins than animals." The writer injected the antitoxin under the conjunctiva of several patients with trachoma and found that the improvement was more rapid than with the ordinary methods of treatment.

He summarizes his results as follows: "As can be readily seen, the experiments are of more interest from a scientific than from a practical standpoint. They show quite clearly that the organism of trachoma produces specific toxins, which cause local and systemic effects, and to whose action doubtless are due those disastrous local effects with which oculists are so familiar; they show that the body produces antidotes to these toxins, though the field invaded is so small that the systemic effects are not appreciable.

Has the trachoma antitoxin a practical application? That, from these few experiments can not be satisfactorily answered. The difficulty of obtaining the trachoma diplococcus in pure culture and the large quantity of toxins necessary to produce systemic effects in the larger animals, renders the production of antitoxin very difficult, still, when a more efficient antitoxin than that used in these experiments shall have been produced, far better results may be obtained and may well repay the difficulties encountered. In the more chronic cases where cicatrization has become well established, much can not be expected of the antitoxin, but in the early stage of the disease it certainly exhibits a specific and curative action."

#### **A Report of Thirteen Cases Showing Partial Reversal in the Visual Fields.**

ZIMMERMAN, M. W., Germantown, Pa. (*Univ. Med. Magazine*, June, 1899). "It has been claimed that hysteria may be diagnosed by peculiar and reasonably constant changes in the visual fields, which are not explained by any recognizable organic lesions. There are three defects to which importance has been attached:

(1) General contraction, in which the limit for white or form suffers relatively more than the limits for the colors.



(2) Annular or ring scotoma, situated at some point between the central field and the periphery; and

(3) Partial or complete reversal of the normal order of the perception limits at the margin of the field."

The writer illustrates these defects with the histories and charts of the field of vision of thirteen patients:

"In the light of our present knowledge," he says, "I may express my own belief in this matter by the following conclusions:

(1) Moderate contraction of the visual field alone is not conclusive.

(2) Extreme contraction in which the field for white or form suffers relatively more than the color fields, suggests very strongly the presence of hysteria.

(3) Complete reversal, and persistent partial reversal, when of considerable extent and not explained by organic lesions are almost certain evidences of the hysterical state.

#### **Operative Treatment of High Myopia.**

WÜRDEMAN, H. V., Milwaukee. (*Amer. Abstr. in Journ. of Ophth.*, Vol. XVI, No. 4, 1899. Original article published in *Annals of Ophth.*, April, 1899). The author notes the advantage the German ophthalmologists have over Americans for observations of the myopic disease on account of the well-known prevalence of myopia among the Germans. High degrees of myopia (over 12.0 D.) are very rare in America. He minutely describes two patients in whom the operation has been done with most satisfactory results.

The literature of the subject is freely quoted and exhaustively considered. The advantages, disadvantages and indications of the operation are fully discussed. He concludes as follows:

(1) Surgical treatment of myopia should be limited to cases over 12.0 D. who suffer great inconvenience from their correcting lenses.

(2) The operations are mainly indicated in young adults.

(3) Cases having considerable changes in the ocular structures, such as progressive choroiditis, fluidity of the vitreous, or detachment of the retina, are not applicable for operation.



(4) The dangers of operative interference are more than counterbalanced by the results to be achieved, which are: increased visual activity, enlargement of the visual field, and extended use of the eyes, which accompany diminishment of the myopia.

**The Use of Egg Membrane in Ophthalmic Surgery.**

COOVER, DAVID H., Denver. (*Ophthal. Record*, Vol. VIII, May, 1899). The writer has used egg membrane in the surgical treatment of four different conditions. The first case was one of symblepharon, the second burn of cornea, the third corneal ulcer and the fourth iridectomy where infection was feared.

"From the above cases and results obtained from the egg membrane, the following are its advantages:

That it is easily obtained, easily applied, produces no pain or irritation, and is aseptic (providing egg is fresh), secretions do not act upon it, can be removed, cleansed and replaced. It is firm and elastic, and adapts itself to the parts wherever applied.

In cases No. 1 and 2 the mechanical and therapeutic action was that it prevented the two raw surfaces from uniting, and gave the surface time to granulate and conjunctiva to form.

In case No. 3 it sealed the ulcer, thereby preventing the escape of aqueous and anterior synechia, gave the ulcer support, and prevented infection.

Case No. 4. The mechanical action in this case was to seal the corneal incision against infection.

In conclusion, I believe this membrane has a wide field of usefulness in ophthalmic surgery, in corneal fistulas, in preventing prolapse of iris, in simple extractions and preventing infection of corneal and scleral wounds."

**A Contribution to the Treatment of Embolism of the Central Artery of the Retina.**

WOOD, CASEY A., Chicago. (*Ophthal. Record*, Vol. VIII, June, 1899). The writer warns against attributing too much of the improvement that often follows embolism to the treatment for "not a few cases of partial and even of total embolism have recovered without any treatment at all." His therapeutic experiences have been, in brief, as follows:

“CASE I. At first total (?), subsequently partial embolism; embolus visible; recovery without treatment; cardiac disease.” From almost complete blindness the vision improved till he could see “very well,” only a peripheral defect in the field of vision remaining.

“CASE II. Partial embolism in an apparently healthy subject; massage and iridectomy; gradual improvement in central vision and extension of the field.” After the operation vision rose from 20/40 to 20/20, but “I am not prepared to assert,” adds the writer, “that the increase of visual power was due to the operative procedure.”

“CASE III. Total embolism of the left artery; organic disease of the heart; retention of a small island of percipient retina: treatment by massage with slight improvement.”

“CASE IV. Total embolism in a healthy woman; massage and narrow iridectomy; some improvement in vision.”

“CASE V. Total embolism in a patient subject to chronic cardiac disease; preservation of partial vision by cilio-retinal vessels; treatment” with massage and nitrite of amyl for over one week “of small avail.”

#### **Excision of the Right Superior Cervical Ganglion of the Sympathetic for Glaucoma.**

BALL, J. M., RENAUD, E. C., and BARTLETT, W., St. Louis. (*N. Y. Med. Journ.*, Vol. LXX, No. 1, July, 1899.) The writers make a preliminary report of what they believe to be the first operation done in America for excision of the superior cervical sympathetic ganglion in glaucoma. The patient had pain in and around the right eye for two months; vision reduced to light perception; T + 3.

There was immediate relief of pain after the operation and tension steadily decreased to + 1. The writers consider this operation much preferable to enucleation and intend “to employ this operation at the earliest possible date” in glaucoma without complete loss of vision.

A review of the literature of the surgery of the cervical ganglia is added.

#### **An Address on the Eye Complications of Acute Specific Fevers.**

FLEMMING, PERCY. (*Brit. Med. Journ.*, April 29, 1899.) The writer treats in a general way the subject of eye

complications in acute specific fevers. Under the heading "etiology and pathology" he mentions the various channels by which the eye may become affected, for example: direct inoculation of the conjunctiva, by the selective action of the toxins of the specific micro-organism and by changes in the blood and vessels, causing hemorrhages. He takes up each one of the acute infectious diseases separately describing the possible eye complications, mentioning their sequelae and giving the proper treatment in each case. The diseases considered are measles, whooping-cough, epidemic parotitis, scarlet fever, typhoid fever, diphtheria, influenza, variola, vaccination, varicella and erysipelas.

#### **Trachoma and Race.**

YARR, M. T., London. (*Brit. Med. Journ.*, May 6, 1899.) "The labors of Swan Burnett, Chibret, and others show that the races composing the population of the world vary to a most extraordinary extent as regards receptivity of the trachoma virus, and that this variation can not be explained by differences of civilization and sedentary surroundings, or even, except in a limited sense, by differences of climate."

"It appears to be certain that the Canadian indigenous tribes, including the Esquimaux are entirely immune; both the specialists and the general practitioners of the Dominion are unanimous in their belief in this absolute immunity." This belief is founded on the fact that oculists of note have never seen a case of trachoma among the Canadian Indians, while other races, living among them under similar conditions suffer greatly from it.

"Pure blooded negroes, such as those from Senegambia, Guinea, and adjacent parts of the west coast of Africa, enjoy a relative immunity as compared with whites; in the United States this immunity appears to be almost absolute" for many authors state that in their experience they have seen either very few or no cases of trachoma among the large black population.

"The evidence of the receptivity of the white races is too well known to need recapitulation here. Among whites the Jews, Poles, Italians and Irish suffer most; and here, undoubtedly, poverty, defective sanitation and overcrowd-

ing are the main causes of the increased prevalence of trachoma amongst these races as compared with other white races."

"To the Chinese and Japanese belongs the unenviable distinction of being the most susceptible to trachoma of all the races of the world."

"Meteorological conditions, while they appear incapable of affecting immunity or partial immunity, have an important influence in reducing or increasing the spread of trachoma amongst the susceptible races. It has long been recognized that, as a rule, the climate of high altitudes is unfavorable to the development and spread of the disease."

"Strong sunlight, by producing inflammatory conditions of the conjunctiva, is undoubtedly a predisposing cause."

"Filth, overcrowding, starvation and all the conditions aptly summed up by Chibret in one word—misery—are also factors in increasing racial receptivity; they probably act mainly by lowering the powers antagonizing disease, but partly no doubt by favoring contagion. Whether trachoma is contagious at all in the strict sense of the word—whether trachoma can communicate trachoma—is doubtful."

#### **A Clinical Study of 287 Cases of Hyperphoria.**

POSEY, WM. CAMPBELL, Philadelphia. (*Philad. Med. Journ.*, Apr. 8, 1899.) His preliminary education in ophthalmology was received by the writer on the other side of the Atlantic from masters who looked very sceptically upon studies of muscle-balance. There was, therefore, no predisposition on his part to become "an enthusiast in muscle-work," and his findings and conclusions should be regarded as those of an "unbiased observer."

His method of examination for hyperphoria differs somewhat from that of others. It is, in brief, as follows: With the left eye covered he determines the refraction of the right. Then leaving the correcting glasses in place, he covers the right eye while the left is tested. Thereupon a colored Maddox rod is lowered before the left eye and the patient asked to look at a bright light situated close to the test-types. Then the covering is quickly withdrawn from the right eye and the patient requested to give the relative positions of the light and the streak. "Any deviation,

lateral or vertical, is at once measured by means of the rotary prisms that are in position before the eyes."

Posey found 287 cases of hyperphoria and grouped them into three classes as follows:

- (1) Cases associated with exophoria (122).
- (2) Cases associated with esophoria (111).
- (3) Cases associated with lateral orthophoria (54).

He also gives figures showing the frequency with which high degrees of ametropia in both eyes were accompanied by hyperphoria, and describes the symptoms which from his observations are attributable to the hyperphoria.

After a careful survey of his statistical material Posey comes to the following conclusions:

"(1) When properly searched for, hyperphoria of  $1^{\circ}$  or more will be found to exist in about 13 per cent. of all cases of refraction; and as regards its frequency, it occurs quite independently of, whether it is associated with exophoria, esophoria or lateral orthophoria. Hyperphoria occurs most frequently to the extent of  $2^{\circ}$ .

"(2) Although in general the degree of hyperphoria seems to bear a close relationship to the degree of esophoria and exophoria existing in any case, increasing or diminishing in proportion as the lateral muscular deviation increases or diminishes, the existence of a high degree of esophoria or of exophoria does not necessarily imply the presence of hyperphoria.

"(3) In like manner, high degrees of ametropia need not be accompanied by hyperphoria, for I found an equal number of cases of both myopia and hypermetropia of high degree in which hyperphoria was absent. In these latter cases, however, it was noted that there was slight deviation in the lateral muscles, while, on the other hand, it was found that high degrees of ametropia associated with high degrees of lateral insufficiencies were almost always attended with hyperphoria.

"(4) In anisometropia, on the other hand, hyperphoria is present in all cases in which the difference in refraction between the eyes is at all marked, even when associated with a moderate degree of esophoria or exophoria. When there is orthophoria in the lateral meridian, or but little difference in refraction between the eyes, hyperphoria is rarely present.

“(5) Strabismus, both convergent and divergent, is invariably accompanied by hyperphoria, of which at least one quarter of its total amount is latent.

“(6) Latent hyperphoria is of frequent occurrence, and occurs quite independently of the state of the lateral muscles, although it shows a greater disposition to occur when associated with exophoria (2 per cent.) than with esophoria (1.67 per cent.), or with lateral orthophoria (1.12 per cent.).

“(7) Unlike latent hypermetropia, latent hyperphoria develops quite independently of age, occurring with as great relative frequency before the third decade of life as thereafter. It is equally liable to develop in myopia as in hypermetropia, but shows a greater tendency to be associated with exophoria (2 per cent.) than with esophoria (1.67 per cent.) or with lateral orthophoria (1.12 per cent.).

“(8) The correction of errors of refraction is not sufficient in the majority of cases to bring about a disappearance of any existing hyperphoria, as I have found that hyperphoria makes itself manifest the longer glasses are worn; the increase in the hyperphoria occurring whether vertical corrections have been incorporated into the formula or not.

“(9) Headache is the most frequent symptom, that of the supraorbital variety predominating.

“In a small proportion of cases it will be unilateral, usually on the same side as the eye with the poorest vision. Typical attacks of migraine may be expected in about 5 per cent. of all cases of hyperphoria.”

In regard to treatment the writer considers it necessary to correct only those cases which show some of the symptoms referred to. He uses vertical prisms whenever the conditions do not require them to be of such a strength that they are contraindicated by mechanical or cosmetic inconveniences and reserves operative procedure for cases of high degree of vertical insufficiency and for those rare ones of low degree when there is emmetropia in both eyes.

#### **Description of a New Method for the Implantation of Glass Balls into the Orbital Cavity.**

OLIVER, C. A., Philadelphia. (*Phila. Med. Journal*, May 27, 1899.) The method is a modification of those of Frost and Morton, and is intended for those cases “in

which abscission, keratectomy or evulsion with insertion of artificial vitreous are inadvisable or impossible." Oliver dissects the conjunctiva free sufficiently to expose the tendons of the recti muscles. Then, with the point of the needle directed toward the cornea, a long catgut thread is passed through the tendon of the internal rectus and then, maintaining the same direction, through that of the external rectus, a large loop, sufficient to allow manipulation, being left between the two points of transfixion. A similar thread is passed from the superior to the inferior rectus. Thereupon the tendons are freed from the eyeball and the latter enucleated. A water-tight glass ball of about three-fourths the size of the normal globe is dropped into Tenon's capsule and each pair of recti muscles sutured together neatly. The cut edges of the conjunctiva are brought into linear apposition by silk threads.

Oliver finds that after this operation there is but little reaction, while the cosmetic results are fully as good as those that are gotten by Mules' method.

**The Pathology of the Amblyopia Following Profuse Hemorrhage and of that Following the Ingestion of Methyl Alcohol, with Remarks on the Pathogenesis of Optic Nerve Atrophy in General.**

HOLDEN, WARD A., New York. (*Arch. of Ophth.*, Vol. XXVIII, No. 2.) Experiments on quinine amblyopia gave the writer a suggestion as to the cause of the amblyopia following hemorrhage and led him to attempt to produce this condition in animals. Experiments instituted on half a dozen dogs and rabbits led to positive results with the following pathological findings: "One or two days after a single profuse hemorrhage, signs of edema of the nerve-fibre and ganglion cell layers of the retina were present, and some of the ganglion cells showed evidences of beginning degeneration. Two weeks after a profuse hemorrhage, or after repeated moderate hemorrhages, simple edema of the nerve-fibre layer still existing, there were advanced degenerative changes in many of the ganglion cells and in the medullary sheaths of their axicylinders throughout the optic nerves, chiasms and tracts."



The upper portions of the visual tract, the external geniculate bodies, the anterior quadrigeminal bodies, the optic radiations and the cortical visual area in the occipital lobe were also examined, but no marked changes found.

"For the ordinary cases of amblyopia following hemorrhage," says Holden, "we have thus found a sufficient explanation in the degeneration of the retinal ganglion cells from diminished nutrition."

Experiments were also tried on several dogs with methyl alcohol, but the animals did not prove very susceptible to the toxic effects. In one case in which the experiment proved successful, "many of the ganglion cells were in a state of degeneration."

"The amblyopia due to the use of methyl alcohol, therefore, comes into the category of those amblyopias which are due to nutritive disturbances in the ganglion cells of the retina."

#### **The Introduction of Iodoform Into the Anterior Chamber of the Eye in Tubercular Iritis.**

WEILL, N. J. (*Arch. of Ophth.*, Vol. XXVIII, No. 2.) Tuberculous material taken from a human iris and ciliary body was introduced into the anterior chamber of two rabbits by the author. After tuberculous nodules appeared in the iris of the animals, iodoform, sterilized with and then freed from carbolic acid, was introduced into the anterior chamber by means of a trochar inserted into a cut in the cornea made by a lance. From the clinical details and results of the histological examination the following conclusions are drawn:

"1. Sterilized iodoform is slowly taken up from the anterior chamber even if the boundaries of the latter are diseased.

2. It undoubtedly exercises a mitigating influence not only in an eye in which tuberculous material is simultaneously introduced, but also in those eye balls in which the iris had previously been tuberculous.

3. It is probable that the tuberculous process in the bulbi already tuberculous would have been less intense if the inoculation could have been made more thorough and kept free from unexpected deleterious complications.



4. Iodoform inoculation may bring about at least a temporary retardation of the tubercular invasion, and afford sufficient time to build up the general system enough to resist the invading bacillus. It is not incompatible with other remedies, but on the contrary, needs them as adjuncts.

5. It is applicable in acute as well as chronic cases.

#### **Clinical Experience with Haab's Powerful Electro-Magnet.**

KNAPP, HERMAN, New York. (*Arch. of Ophth.*, Vol. XXVIII, No. 2.) Before giving his own experience with Haab's magnet, the writer briefly relates fifteen cases reported by American authors in which it was used. To these he adds thirteen of his own practice all of which he treated since May, 1898.

"CASE 1. Chip of steel in periphery of anterior chamber. Beginning iritis. Extraction by large magnet through entrance canal. Perfect recovery."

Commenting on this case Knapp says:

"It shows that the large magnet can draw out small foreign bodies through the wounds of entrance without dilating them. I dare say that in other cases a dilatation, even a T-shaped opening, may be necessary, but we should try first whether the foreign body will not come out through the opening it itself made. Lateral traction with the powerful magnet must be carefully avoided."

CASE 2. Piece of steel seen in anterior chamber; attempts at extraction with small magnet unsuccessful. Hemorrhage. Foreign body disappeared, not indicated by large magnet. Eye blind."

In cases 3, 4 and 5 the large magnet did not show the foreign bodies. The eyes had to be enucleated and when brought near the magnet, clung to it.

In case 6 a foreign body was suspected in the eye-ball, but examination with the large magnet gave a negative result. Expectant treatment was used and several months later vision on that eye was 20/30 and there was no discomfort.

"CASE 7. Foreign body entering through nasal part of cornea, iris and lens; led around lens through temporo-inferior part into the pupil; extracted through small

corneal section. Perfect and permanent recovery." Vision 20/20.

"CASE 8. Piece of steel entered eye through larger wound in cornea, iris and lens. Extracted ten weeks later with magnet, when a corneal incision through an adherent scar had been made. Preservation of form of eye and perception of light."

"CASE 9. Entrance through cornea and lens. Panophthalmitis in twenty-four hours. Chip removed immediately. Exophthalmus. Chemosis. Lids stitched together. Swelling soon diminished. Lower half of cornea sloughed. Enucleation. Scar in posterior part of sclera. Recovery."

"CASE 10. Hypopyon; iritis twenty-four hours after injury, checked by extraction of foreign body. Posterior synechiae detached with forceps. Foreign body with a string of ciliary processes extracted. Hemorrhage. Recovery with somewhat shrunken but quiet eyeball." This case is important as it shows that the removal of the foreign body which has already caused iritis, can prevent development of panophthalmitis. It also shows that we should "be careful to avoid entangling the piece of iron in the loose tissue of the ciliary processes by directing the power line of the magnet toward the posterior pole of the lens, whence the foreign body by slow and careful movements of the eye can be led around the lens into the posterior chamber, and thence into the anterior through the pupil."

"CASE 12. Piece of iron entered through cornea and lens into vitreous. Extracted by leading it into lower part of posterior chamber. Keratotomy. Extraction with Haab's magnet. Patient doing well."

"CASE 13. Chip of iron three months in eye. Iridocyclitis. Sediment at bottom of anterior chamber. In nasal part of iris an indistinct black spot. After keratotomy iron extracted with Haab's magnet."

**Report of a Committee of the Ophthalmological Society of the United Kingdom Appointed in March, 1896, to Consider the Relative Value of Simple Excision of the Eyeball, and the Operations Which Have Been Substituted for it.**

(Trans. of the Ophthalm. Soc. of the United Kingdom, 1898.) (*Continued from page 263.*) The possible disad-

vantages of the insertion of an artificial globe into Tenon's capsule are:—

1. Escape of the artificial globe.
2. Amount of reaction and prolonged stay in hospital.
3. Breakage of artificial globe.
4. Displacement of artificial globe outside the cone of muscles.

1. **ESCAPE OF THE ARTIFICIAL GLOBE.**—Out of forty cases operated on by Lang, in six the globe escaped previous to the patient leaving the hospital from the fifth to the ninth day. As several of the later cases were discharged from the hospital on the fourth day, it is possible that the total number in which the globe escaped was a good deal larger.

In one case it is known definitely that the globe did escape six weeks after the operation, after the patient had left the hospital. Frost performed this operation in six cases but in only one was the globe retained.

That the globe in many of these cases may be retained for many years is definitely proved by six of Lang's cases, which were seen at the following dates after the operation: 4 1/2 years, 10 years, 10 years, 10 years, 9 years and 8 years.

In all except the first and last of these cases an artificial eye had been worn since the operation.

2. **AMOUNT OF REACTION AND PROLONGED STAY IN HOSPITAL.**—The amount of reaction after the insertion of an artificial globe into Tenon's capsule is very slight. In only three of Lang's forty cases was any undue swelling of lids or conjunctiva noted. The length of stay of the patients in the hospital in most of Lang's later cases was not longer than after ordinary excision.

3. **BREAKAGE OF THE ARTIFICIAL GLOBE.**—Breakage of a glass globe implanted into Tenon's capsule might prove a source of more trouble than the breakage of a glass globe implanted in the sclerotic. In the latter case the sclerotic and its contents could be removed from Tenon's capsule without opening up the fat of the orbit, whereas in the removal of Tenon's capsule, and its contents the fat of the orbit must necessarily be cut into. Lang in twelve of his forty cases implanted globes made of celluloid, and in one case a globe made of silver.

In three of the cases in which celluloid globes were implanted, the globe was known to have escaped. In no case is it known definitely that a celluloid globe has been retained for several years.

We know of no case in which a glass globe implanted into Tenon's capsule has subsequently been broken.

4. **DISPLACEMENT OF ARTIFICIAL GLOBE OUTSIDE THE CONE OF MUSCLES.**—Frost gives only one instance of this operation in which the sphere was known to be retained; it was too small to be of much service, and it appeared to have become displaced, so as to lie outside of the cone of muscles.

In four of the six cases of Lang's in which the globe was retained for several years, it has remained in a good position in the center of the socket. In one case it was displaced upwards, and in another outwards.

The displacement of the globe had not interfered with the wearing of an artificial eye.

The disadvantages of optico-ciliary neurotomy and neurectomy are:

1. Free hemorrhage into the orbit and protusion of the eyeball.

2. Ulceration of the cornea.

3. Return of pain.

4. The development of papillitis in the other eye.

1. **FREE HEMORRHAGE INTO THE ORBIT AND PROTUSION OF THE EYEBALL.**—Hemorrhage into the orbit and a certain amount of protusion of the eyeball always accompany both operations. As a rule the hemorrhage is not excessive and can be easily controlled by pressure. Occasionally, however, it is severe, there is then considerable trouble in getting the lids to meet, and maintaining them in apposition over the proptosed globe. Should they not meet, and the cornea be for a time left exposed, the risk of its ulcerating is much increased.

2. **ULCERATION OF THE CORNEA.**—Several cases of ulceration of the cornea after optico-ciliary neurotomy have been recorded by Landesberg, Leber, Ridard, and others.

Out of fifty-three recorded cases collected by Poncet, destruction of the eye or of the cornea by suppuration appears to have occurred five times.

Linds Furgeson informs us that he has performed the operation of optico-ciliary neurectomy between thirty and forty times, but has not met with any case in which ulceration of the cornea ensued.

3. RETURN OF PAIN AFTER OPERATION.—Seven cases are reported by Landesberg, Linds Furgeson and Treacher Collins, in which after a longer or shorter interval the pain returned after operation.

4. PAPILLITIS IN THE OTHER EYE.—Schweigger gives two cases in which this complication occurred. In neither was the condition of the eye operated on one that usually causes sympathetic mischief.

The disadvantages of abscision mentioned in literature on the subject are:

1. Hemorrhage.
2. Suppuration.
3. Irritability of the stump, with or without sympathetic irritation of the other eye.

Of the first two complications we have been unable to find any recorded examples to quote.

3. IRRITABILITY OF THE STUMP, WITH OR WITHOUT SYMPATHETIC IRRITATION OF THE OTHER EYE.—Poncet, Priestly Smith, Treacher Collins, and Ernest Clark have communicated cases of abscision followed by irritation of the stump or of the other eye, the symptoms improving after removal of the stump.

IV. What are the special advantages with relation to the wearing of an artificial eye?

After all the operations under consideration, with the exception of optico-ciliary neurotomy and neurectomy, it is necessary that an artificial eye should be worn to conceal the deformity produced. After simple excision, in the large majority of cases, the artificial eye is not so prominent as the natural one; it has a sunken appearance, its range of movement is considerably restricted, and sometimes the palpebral aperture is narrower than normal.

The use of the artificial eye after this operation is liable, especially if it gives rise to any irritation, to cause an accumulation of the secretion from the conjunctiva to collect in the hollow space behind it. This from time to time overflows, giving the eye a watery appearance or allowing strands of coagulated mucus to form on its surface.

The sunken appearance of the glass eye is avoided, after the operation of abscision, evisceration with the insertion of an artificial globe into the sclerotic, or excision with the insertion of an artificial globe into Tenon's capsule.

The portion of the eyeball which is left, or the embedded artificial globe, forms a support for the glass eye which serves to keep it pressed forwards in contact with the inner surface of the eyelids. In this way the normal relation of the eyelids and eyeball are closely simulated and the surface of the artificial eye is consequently kept clean and bright.

After these three operations the accumulation of conjunctival secretion in a space behind the artificial eye is also avoided, because its concavity is occupied by the stump.

The movements of the artificial eye are never, whatever operation is performed, as extensive as those of the normal eyes, being necessarily limited by the depth of the conjunctival sac. The movements of the stump after abscision or Mules' operation, and sometimes after the insertion of a globe into Tenon's capsule, are almost as extensive as that of the eyeball. The average amount of movement obtained in the artificial eye is greater after these three operations than after simple excision. The lateral movements are generally more restricted than the vertical.

V. What points are there to be emphasized in the technique of the operations under consideration?

**SIMPLE EXCISION:**—Of the technique of the operation of simple excision the Committee think it unnecessary to enter into details. In excising suppurating eyes, however, they would lay stress on the importance of thoroughly irrigating the conjunctival sac before commencing the operation of taking every possible precaution to prevent the escape of the purulent contents of the globe into the wound; of thoroughly washing out the socket with antiseptic lotion on its completion, and afterward of only applying lightly a pad of antiseptic wool over the closed lids.

**MULES' OPERATION:**—With regard to the technique of Mules' operation, those who have had most experience of it are agreed as to the importance of the following particulars:

(a) The necessity for the use of strict antiseptic pre-

cautions, including the thorough flushing out of the sclerotic with antiseptic fluid previous to the insertion of the artificial globe.

(b) The thorough cleansing of the inner surface of the sclerotic and the removal of all shreds of choroid and retina from it, either by wiping with wool, wrapped round forceps, or with the scoop specially constructed for the purpose.

(c) The arrest of hemorrhage, which can be easily obtained either by flushing the interior of the sclerotic with lotion, packing it with bits of sponge or sterilized gauze, holding the sclerotic over the artificial globe with forceps, or by the use of Brudenell Carter's tampon.

(d) The insertion of a glass globe of such a size that it fits loosely and allows the edges of the sclerotic to come into apposition without any traction.

(e) The accurate apposition of the edges of the wound and the removal of projecting angles.

To facilitate the introduction of the glass globe, Mules recommended that the sclerotic should be slit vertically. The invention of the "artificial vitreous insertor," described and pictured in the *Brit. Med. Journ.*, 1888, Vol. I, p. 26, has removed the necessity for any such slit in the majority of cases.

Bickerton recommends the use of silver gilt spheres, because considerable pressure can be used by the insertor in their introduction without the fear of breakage.

Should it be found necessary to insert a smaller globe than the one first introduced, Bickerton advises caution in the avoidance of traction, on the optic nerve in the extraction of the unsuitable one. He records a case in which traction undoubtedly did occur where persistent nausea and vomiting followed, lasting four days.

Some operators lay stress on division of the conjunctiva separately from the sclerotic, and also separation of it back from the sclerotic, as far as the equator. Others incise the sclerotic, and conjunctiva together. These latter pass their sutures through both structures simultaneously, while the former suture the sclerotic, and conjunctiva separately at right angles to one another.

Mules advocated the introduction of a horsehair drain

into the orbital tissue on the completion of the operation, as a means of lessening the ensuing reaction.

He cuts the external canthus and burrows freely into the orbit with a pair of sharp scissors to the back of the sclerotic, taking special care to open the subscleral space; he then introduces an antisepticated horsehair, drain, the cut ends just passing through the cut canthus. This introduction of a drain does not seem to have been practiced much by other operators.

*( To be continued. )*



## ABSTRACTS FROM CURRENT ENGLISH OPHTHALMIC LITERATURE.

BY C. DEVEREUX MARSHALL, M. D.,

LONDON, ENGLAND.

### **Chronic Edema of the Conjunctiva Associated with Middle Ear Disease.**

BATTEN, RAYNER D. (*The Lancet*, April 8, 1899.) His patient was a man aged 35 who had well marked serous edema of the ocular conjunctiva of the left eye. All forms of treatment were for some months tried but without success, and when the conjunctiva was incised serous fluid escaped which rapidly reaccumulated. A large polypus was discovered in the left ear and this was removed. This caused the discharge from the ear to become much less and after further treatment it ceased altogether. Simultaneously with this the edema of the conjunctiva went down without any further treatment of the eye.

He thinks that the eye condition entirely depended on the ear trouble.

### **Ocular Phenomena Associated with Cheyne-Stokes Respiration.**

WHITEHEAD, ARTHUR L., Leeds. (*Lancet*, Feb. 25, 1899.) The title is somewhat misleading inasmuch as the cases in which he observed the eye symptoms he describes did not exhibit the respiratory changes.

He describes two cases one of which had localized meningitis following middle ear disease and the other of a subdural abscess involving the right lobe of the cerebellum.

The ocular symptoms were the following:

At the commencement of each cycle the diameter of the pupil was 1.5 mm., it then gradually and slowly dilated to 5 mm., then as gradually contracted again the whole cycle taking about 50 seconds.

After a pause of a few seconds the cycle recommenced.

The light reflex was at no time interfered with neither was the phenomenon associated with any other eye change.

The author believes these changes are due to ill-régu-

lated action of the lower centers when they are free from the control of the higher ones, and these are analagous to the respiratory changes known as Cheyne-Stokes Respiration. In these two cases there was respiratory change, but the rythmic movements of the pupil are very similar.

Other ocular symptoms have been described as occurring in association with this form of respiration and these have consisted of extreme variation in the size of the pupils, nystagmus, conjugate movements of the eyes, strabismus and the loss of light reflex.

**Follicular Conjunctivitis Caused by the Long-Continued Use of Cocain.**

KOSTER, PROF. W., of the University of Leyden. (*Ophth. Review*, March, 1899.) The patient was a woman who suffered from a slight catarrhal conjunctivitis and for this was given a solution of cocain for home use. She soon got worse and when first seen by the author her appearance was really alarming. There were numerous spots of hemorrhage on the ocular conjunctiva and the palpebral conjunctiva was hyperaemic and covered with follicles of unusual size and appearance. Cocain was at once recognized as the probable cause of the trouble and this was at once discontinued and a solution of sulphate of zinc 1-600 was used. Ten days later all the follicles had disappeared and the conjunctiva was much paler, and a month under simple treatment the normal condition was restored.

This case also shows the bad effect of cocain on the blood vessels which although it causes contraction of the vessels when first applied yet later on it causes them to lose all tone and to become dilated. This should warn surgeons to be very careful not to allow the patient to apply cocain as a home remedy as although it gives temporary relief yet its effect on the vessels as well as on the epithelium should prohibit its use for anything but a preliminary to operations.

**Unilateral Optic Neuritis.**

HIGGENS, CHARLES, F. R. C. S., Ophthalmic Surgeon to Guy's Hospital. (*Lancet*, April 22, 1899.) Unilateral optic neuritis in a female, aged 21, who early in May 1897, had severe headache on the right side. When seen

a week later the right eye was blind, there was intense congestion of the retinal vessels and marked optic neuritis. The left eye was normal. Three bad teeth were found and these were at once removed and at the root of two of them there were abscesses while the third was carious. The patient became worse and in view of there being probably a tumor or an abscess the skull was opened by Mr. Victor Horsley but nothing of the sort was found. The left eye then became blind but no ophthalmoscopic changes were visible until shortly before death when it became slightly congested.

There was extensive basal meningitis, and both optic nerves as well as the chiasma were all very much swollen, the nerves being especially large.

Mr. Higgins ascribes the whole of the fatal illness as being due to the carious teeth.

# ABSTRACTS FROM RECENT GERMAN OPHTHALMIC LITERATURE.

Quarter Ending July 1st, 1899.

BY

ROBERT L. RANDOLPH, M. D.,

BALTIMORE, MD.

## **Gonorrheal Conjunctivitis.**

FOURNIER, PROF. (*Wochenschrift für Therapi und Hygiene des Auges*, No. 30, 1899.) Fournier recognizes two varieties of gonorrheal conjunctivitis. With the clinical history of the first variety we are all familiar. There is, however, another variety which has found but meagre notice and to which Fournier calls our attention. "Whenever," he says, "you see any one with very red eyes who can look you in the face without winking and without lacrymation you can be almost certain that you have before you a case of gonorrheal conjunctivitis." In this type of the disease the infection is an endogenous one. First one eye is attacked and sooner or later the other. The affection presents three characteristic symptoms, *redness, diminished sensibility to light and diminished lacrymation*. It is not a serious affection and will get well usually without treatment.

## **The Resection of the Cervical Sympathetic in the Treatment of Glaucoma.**

JONNESCO, PROF. THOMAS, Bukarest. (*Wiener klin. Wochenschr.*, No. 18, 1899.) The author's conclusions in part are as follows: These operations have demonstrated the important bearing which the cervical sympathetic has upon the etiology of glaucoma with the exception of the hemorrhagic variety. The removal of the cervical ganglion paralyzes the nerves which give rise to the most troublesome of the glaucoma symptoms.

The best results are obtained in those cases where irritation and inflammation are not too pronounced. The

operation, however, is comparatively insignificant and should be resorted to in all cases of glaucoma even in absolute glaucoma. Improvement usually takes place immediately after the operation and in a majority of cases is permanent and at the same time progressive. The operation has often proved successful in giving relief where iridectomy failed. In cases where glaucoma and Basedow's disease coexist the resection of the cervical sympathetic will influence for the better not only the glaucoma but also the Basedow's disease. He reports four cases where all the symptoms were dissipated by this operation. In four cases no improvement followed.

#### Formalin Paste.

WOLFFBERG, DR., Breslau. (*Wochenschr. f. Ther. u. Hyg.*, des Aug., No. 33, 1899.) The author has more than once spoken of the value of what he calls formalin paste in certain eye affections, chiefly of the cornea and conjunctiva. He calls attention to the fact that this paste when introduced into the normal conjunctiva is soon carried off by the tears but when placed upon an area which is the seat of an inflammation especially in the case of keratitis the paste forms a membrane over the site of the inflammation. This membrane can not be displaced by the movements of the lids and as the inflamed area increases or diminishes in size a corresponding change in the size of the membrane of paste will be observed. Pathological changes then which otherwise might go unnoticed will be brought out by the application of the paste. He reports a number of cases where the employment of this material acted not only as a valuable therapeutic agent but was also helpful as a means of diagnosing the trouble. One case of hypopyon keratitis is especially interesting. In this case he had employed the usual remedies without avail. The condition grew steadily worse till nearly half of the anterior chamber was full of pus. A paste was made composed of bolus alb., water (100 drops) and three drops of formalin. This was applied to the diseased area till the latter was well covered. This procedure was repeated every hour till late in the night. Then a 5 per cent. salve of airol was rubbed in and the eye was covered up. The next day the paste treatment was resumed. The treat-

ment was followed by speedy abatement of all the symptoms and by the eighth day the disease was practically cured. The paste is particularly valuable in those cases of conjunctivitis where there is the formation of a membrane (as in gonorrheal) for it seems not only to limit the formation of this membrane but as it were picks the membrane out and incorporates itself with it in every part of the sac, just as fluorescein does in the case of defects in the corneal epithelium.

#### **The Anaesthetic Properties of Acoin.**

TROLLDENIER, of Dresden, describes in the *Therapeutische Monatshefte* (No. 1, 1899) the properties of this local anesthetic. It is undoubtedly less harmful than cocain. It produced no symptom of poisoning and 0.5 were borne without disturbance, though large quantities produced symptoms of gastric and intestinal irritation. Concentrated solutions of acoin when dropped on the cornea and conjunctiva produced anesthesia lasting for several days though there was produced at the same time much irritation of these parts. Aqueous solutions of 1.1000 produced anesthesia lasting fifteen minutes; 1.400 thirty minutes; 1.200 sixty minutes; 1.100 from forty to eighty minutes and 1.40 lasting a day.

These solutions up to 1.100 are absolutely free from injurious effects. For subcutaneous injection the author recommends the following formula: Acoin 0.1, Natr. Chlorid. 0.8, Aq. dest. 100.0.

The reaction following an injection is insignificant and the anaesthesia lasts from forty to fifty minutes in the area where the injection was made. Acoin must not be boiled with water. The water must be simply warmed. The experiments show that this agent is far less harmful than cocain and that it works more quickly and its effects last longer than the latter.

#### **Disease of the Internal Coats of the Eye Caused by Exposure to the Sun's Heat.**

BRANDENBURG, DR. (Extracted from the *Wochenschrift für Ther. u. Hygiene des Auges*.) In this connection Wicherkiwicz has reported two cases. A boy of nine years and a man 49 years old had been exposed to very intense sun's heat during June. Both complained of headache

and vertigo. Diplopia, narrowing of the visual field and diminished visual acuity were observed. Ophthalmoscopic examination was negative. Recovery in a short time. In the case reported by Brandenburg there were no brain symptoms but on the contrary marked changes in the retina. After a hard day's work in the hot sun the man noticed on his way home in the evening that his vision was much reduced. Pupillary reaction was found to be absent and visual acuity much reduced. There was no appreciation of either red or green. A diagnosis was made of neuro-retinitis. It is rather singular that such conditions occur so rarely, yet the provocation is so constantly present during the summer months.

**A Contribution to the Subject of Keratitis Neuroparalytica**

SEYDEL, DR. F., Breslau. (*Von Gräfe's Archiv. für Ophthal.*, Bd. XLVIII, Ab. 1.) Seydel reviews the various experimental and clinical contributions to this subject and reports and analyzes several cases.

He regards a vaso-motor disturbance as the chief factor in the causation of this affection, that is to say, a vaso-motor disturbance in the sense of a paralysis of the constrictors. The keratitis is not an inflammation but a necrosis. Secondary and caused by this we find inflammatory symptoms. In short, he concludes that the so-called neuroparalytic keratitis is nothing more than a necrosis which is the expression of disturbances in nutrition caused by a vaso-motor disturbance, and this necrosis is first distinguished by an abolition of the normal corneal sensitiveness. The assumption that there are specific trophic nerve fibres does not rest on good anatomical grounds. He calls attention to the points of resemblance between this affection and the neurotrophic decubitus seen in lesions of the cord and the so-called "mal perforant du pied," which latter is also seen in spinal cord lesions.

In both these latter affections we have more or less progressive necrosis of the skin and of the underlying tissue.

**A Contribution to the Pathological Anatomy of Diseases of the Tear Sac.**

HERTEL, E. (*Von Gräfe's Archiv. für Ophthal.*, Bd. XLVIII, Ab. 1.) The author gives us an interesting resume of the work which has been done in this line in the

Jena eye clinic during the last few years. He speaks first of the operation of extirpation of the tear sac. Of these there were fifty-two. Irrigation with antiseptic solutions, probing, and in fact, the usual methods of treatment had been tried with all these cases, but exceptionally with success. In a majority of the cases there was ectasia of the sac. In cases where the suppurative process had gone on to the formation of a fistula total extirpation was only performed when the parts surrounding the sac were free of inflammation. Extirpation of the sac was performed when tuberculosis of the sac was present, also when important operations were to be performed upon the eyeball, or where there was a persistent corneal affection. The sutures were generally removed about the fourth or fifth day and cicatrization was complete on the eighth or tenth day. Slight epiphora often remained but this disappeared in a short time. All of the extirpated sacs were subjected to a careful microscopic and macroscopic examination. The microscopic changes were many and interesting and included practically all of the inflammatory and degenerative changes in mucous membrane. What is specially germane to the therapy of such cases are his conclusions from a macroscopic study of sacs which had been treated by forcible dilation with probes. He thinks such a course of treatment is absolutely to be discarded. It brings about abnormal adhesions and growths in the tissue and not infrequently a stricture which has been broken through by force is succeeded by another which is quite as bad. On the other hand one is justified in thinking that gentle and careful probing, not repeated too often, is advantageous. In those cases where a style is left in the canal the latter will, of course, remain open, but when the style is removed the walls of the sac which have undergone sclerosis from long irritation will grow together, and since the epithelium is lacking the lumen can disappear entirely. From all of which it may be inferred that Hertel is a warm friend of extirpation and of small probes.

**The Value of Lohnstein's Hydrodiaskope in Cases of Keratoconus and Irregular Astigmatism.**

MAJEWSKI, DR., Krakau. (*Klin. Monatsbl. f. Augenheilk.*, Mai, 1899.) The author gives us an interesting



account of how Lohnstein (who was affected with a high grade of keratoconus) first corrected his visual defect by constructing for himself what he called a "Wasserbrille." This instrument has been subjected to a number of tests by Majewski in the clinic of Prof. Wicherkiewicz and with gratifying results. Majewski describes the construction of the instrument which we confess must be rather cumbersome, but which unquestionably (from a study of his cases) aids immensely the vision of this unfortunate class of cases. Lohnstein has described (*Klin. Monatsbl. für Augenheilk.*, 1896), how the instrument acts where there is either keratoconus or a high grade of irregular astigmatism present. The hydrodiascope employed by Majewski is a modification of that of Lohnstein and is shaped more like an ordinary pair of spectacles and is much lighter and more comfortable than the original instrument of Lohnstein. The fluid with which the chambers of the hydrodiascope are filled is a physiological salt solution and no ill effects were ever seen from contact of the cornea with this solution. He proceeds to analyze fourteen cases. In every case an effort was first made to improve vision with glasses.

In the first case reported there was irregular corneal astigmatism with vision 6/18 in both eyes and no visual improvement with glasses, yet with Majewski's instrument the vision was brought up to 6/6.

The next case is equally striking. A woman with keratoconus and nebulae of the cornea, the result of trachoma. She could count fingers in 2 M. Test lenses produced no improvement, and yet when wearing the hydrodiascope her vision went up to 6/8.

#### **Operation for Secondary Cataract.**

KUHNT, HERMANN, Königsburg. (*Zeitschr. für. Augenheilk.*, Bd. I, Heft. 3.) Kuhnt gives us his conclusions from a large experience with this class of cases. The indications for operation are as follows:

1. In all cases where the vision is less than 1/3 and where no spontaneous improvement is to be expected.
2. Even in those cases where vision is 1/3, but where a part only of the pupil is perfectly clear, the rest being cloudy.
3. In that class of cases where the subjects are indolent

and unintelligent and whose vision, while it may be  $1/3$ , will, we know from experience, grow worse from the development of capsular cataract.

4. In those cases where the manner of life, that is to say, the occupation demands a greater visual acuity than  $1/3$  and where we have reason to hope that the visual acuity will still further be improved by an operation.

For the success of this operation it is important that the eye should be free from all irritation. 2nd. That the tension should be normal. 3rd. That the illumination should be adequate. This is of the highest importance. Kuhnt uses the electric light and describes an apparatus which he has devised for illuminating the field. The author's observations are based upon over seven hundred dissections and in not a single case was there a loss. In every case there was a notable improvement in vision. In the last hundred cases there was an average visual acuity of 28.8 and after the operation it had mounted to 58.7.

#### **The Ocular Symptoms in Disease of the Corpora Quadrigemina and Pineal Gland.**

BACH, DR. LUDWIG, Würzburg. (*Zeitschr. für Augenheilk.* Bd. I. Heft, 4 and 5.) Bach carries us over the entire literature of the subject and discusses in the most exhaustive manner all the disturbances (including growths) of the corpora quadrigemina and of the pineal gland, that is to say, the disturbances which are accompanied by eye symptoms.

The contribution is a most valuable one, but too long to review in detail. We may conclude from a study of his cases that isolated disturbances of the corpora quadrigemina in the case of human beings do not lead to blindness nor can we say for certain what lesions of the corpora quadrigemina lead to visual disturbances.

Double-sided disturbance in the roof of the corpora quadrigemina will cause, in all probability, reflex pupillary rigidity on both sides, while a one-sided disturbance will cause reflex rigidity of the pupil on the same side. Muscular disturbances are frequently seen in diseases of the corpora quadrigemina. Symmetrical paralyses to a certain extent are characteristic of affections of the corpora quadrigemina. Isolated paralysis of eye muscles do

not seem to point especially to diseases of the corpora quadrigemina. Paralysis of the trochlear and motor-oculi together, strongly suggests a lesion of the corpora quadrigemina. Ataxic manifestations are frequently seen in diseases of the corp. quad. and that quite early.

**An Investigation into the Discoloration of Eserin Solutions.**

HALLAUER, DR. OTTO, Basel. (*Zeitschr. für Augenheilk.*, April, 1899.) The author after experimenting with the various derivatives of physostigma comes to these conclusions: 1st. That we do not possess a preparation of physostigmin which is proof against discoloration. 2d. The addition of ammonia and heating the solutions up to 80 C. may be employed as a test of the stability of preparations of physostigma. 3d. We have two agents which lessen the tendency of physostigma to decompose, sulphuric acid and boric acid the latter in 4 per cent. solutions. The sulphuric acid is preferable as it makes the eserin solution resistant to light, ammonia and high temperatures, and such solutions need not be put into dark glass bottles. Boric acid will protect only against light and for about three weeks. The action of solutions of physostigma is not affected by the addition of either boric acid or sulphuric acid. The salicylate of physostigma is more stable than the sulphate. When sulphuric acid is added in the proportion of 1-2 drops of the acid to a solution of 30,0 we have a solution which will not decompose.

**A Contribution to the Etiology of Parenchymatous Keratitis.**

DIEZ, DR. W., Würzburg. (*Zeitschr. für Augenheilk.*, Bd. I, Heft 6.) Diez reviews the literature of this subject and discusses the well known opinion of Hutchinson that this variety of keratitis is always due to inherited syphilis. Mention too is made of the reports of those observers who hold that parenchymatous keratitis may also be an evidence of acquired syphilis. It is clear however that Diez is very much of the opinion which is held by his master v. Michel, namely, that a large number of this class of cases must be regarded as of tuberculous origin, an opinion which I think is in a measure supported by the fact that cases of parenchymatous keratitis in children often do far better under cod liver oil than under treatment directed especially against lues.

The conclusions of Diez are as follows: In 53,3 per cent. tuberculosis was the demonstrable cause. In 34,6 per cent. hereditary syphilis was the etiological moment. In twenty-three cases Diez was unable to throw any light upon the source of the trouble. In only two cases could the disease be traced to acquired syphilis.

**Disappearance of Spasm of Accommodation After the Use of Eserin.**

DUBROWSKY PROF. W., St. Petersburg. (*Klin. Monatsbl. f. Augenheilk.*, Juni, 1899.) The following very interesting case is reported by Dubrowsky. The patient was sixty-two years old and complained of gradually failing vision. In the right eye there was this condition: M 1-16 with vision equal to 20-70. The ophthalmoscope showed marked excavation of nerve with some atrophy and a halo around the papilla. The anterior ciliary vessels were dilated and tortuous and the pupil of medium size. With the left eye the patient could only count fingers at  $\frac{1}{2}$  M, and this was explained by the presence of a big opacity in the vitreous body. The tension in both eyes was decidedly elevated. One drop of a solution of eserine was ordered night and morning and after five days it was observed that the pupil was contracted ad maximum while the myopia in the right eye had disappeared absolutely, and in its place there was emmetropia and the vision  $\frac{2}{3}$ . When the eserine was discontinued the myopia would again make its appearance only to disappear on resuming the eserine. In the left eye the use of the eserine seemed to cause a disappearance of the opacity in the vitreous body and the vision went up to  $\frac{2}{3}$  the myopia remaining the same. Dubrowsky reminds us that the inflammatory changes in glaucoma are chiefly in the anterior part of the choroid and ciliary body and as a result of these changes irritation of the ciliary body and spasm of accommodation are produced. He attributes the disappearance of the spasm of accommodation to the action of eserine in regulating the distribution of blood in the choroid and ciliary body.

**A Report of 101 Cases Operated Upon for Detachment of the Retina According to My Method.**

DEUTSCHMANN, PROF. R., Hamburg. (*Beiträge zur Augenheilkunde*, Heft 40.) It will be remembered that a

few years ago the author reported some cases of detachment of the retina where he had effected a cure by an operation which consisted in cutting the bands which connected the shrunken vitreous body with the retina and which pull the latter out of position. This operation he has somewhat modified. He now uses a double-edged knife (Gräfe) which he plunges into the subretinal space at a point which corresponds to the detachment. The knife is carried through obliquely to the opposite side and penetrates this side as far as the conjunctiva. The knife is then withdrawn with a certain maneuver. The puncture should be made as far as possible from the corneal border and the eye should always be atropinized. He has also modified the operation for the injection of the rabbit's vitreous, using for this operation an instrument which not only cuts but acts also as a canula. The vitreous of the rabbit is brought to the proper consistency by mixing it with salt solution. Experience has taught the author that eyes which resisted every other treatment were in a number of cases not only improved but cured by this method. The amount of sight obtained was of course largely dependent upon the extent of the choroidal and retinal changes before the operation. Considering the results of other methods of treatment we are astonished at the results reported by Deutschmann. Of the 101 cases reported twenty-six were cured, thirty-four were improved and in forty-one cases there was no improvement. It is clear from Deutschmann's statistics that his method of treatment should always be tried.

#### **Two Cases of Pseudoglaucoma Following Grip.**

WALTER, DR. O., Odessa. (*Die Ophthalmologische Klinik*, 5 Juni, 1899.) Both cases closely resembled one another. In both cases an acute affection of the eye was present during an attack of grip. There was elevation of intra-ocular tension and in addition there was injection of the episcleral veins together with clouding of the cornea and vitreous and in the second case there was rigidity and dilatation of the pupil and shallow anterior chamber. These were the symptoms which spoke for glaucoma. On the other hand there was no narrowing of the field. The fact that atropin in the second case was followed by rapid

improvement argues against the affection being glaucoma and in the first case iridectomy was tried but without relief, and this would speak against glaucoma being present in the first case. Walter regards the disease as being a serous inflammation of the ciliary body. In the first case the failure of the treatment was to be attributed to the too tardy use of the atropine. The second case was particularly interesting because it demonstrated that every sudden elevation of intra-ocular tension must not be attributed to glaucoma, and that sometimes in such cases atropine is exceedingly useful. If the use of atropine makes the condition worse we may conclude that it is actually glaucoma and proceed at once to either pilocarpin or to iridectomy.

#### **The Action of Euphthalmin upon the Eye.**

WOSKRESSENSKY, JOSEPH, St. Petersburg. (*Wochenschr. für Therapie und Hygiene des Auges*, No. 36, 1899.) This product has been on the market for at least a year and it has been subjected to more or less trial at the hands of Treuttler, Vossius, Boll, Vinci and others. The experiments of Woskressensky were usually made with a 5 per cent. solution, though sometimes a 1 per cent. solution was employed. These are his conclusions: Mydriasis was quite prompt. 2. The duration of the mydriasis is short as compared to that resulting from the use of other well known mydriatics. 3. There is very slight paresis of accommodation. 4. The intra-ocular tension is not elevated. 5. The corneal epithelium remains intact. 6. Irritative symptoms were never present, nor were there any toxic symptoms. From which it may be inferred that euphthalmin has a permanent and valuable place in ophthalmic practice.

#### **The So-called Embolism of the Central Artery of the Retina and Its Branches.**

REIMAR, DR. MAX, Zurich. (*Archiv. für Augenheilk.*, März, 1899.) The author has given us a complete analysis of many of the cases reported up to date and also of the theories bearing upon the clinical aspect of the subject. In addition to this we find here some valuable information about the circulatory disturbances in the eye together with a vast amount of pertinent literature. The chief points

in his work may be summed up as follows: We can only speak of a complete interruption in the blood current when we can prove that there is a breaking up of the blood column in vessels which are peripherally located from the obstruction. While the assumption of either thrombosis or of embolism may not explain many questionable clinical features the assumption of an endarteritis proliferans of the involved vessel will be sufficient to explain the condition and this should be our conclusion, especially when we can make out with the ophthalmoscope thickening of the walls of the vessel. In the case of either embolism or thrombosis we must expect total blindness and granular breaking up of the blood column in the vessels concerned.

**Phthisis Bulbi in the Case of Choroidal Sarcoma.**

JARNATOWSKI, DR. K., Breslau. (*Archiv. für Augenheilk.*, März, 1899.) Jarnatowski's paper, while discussing quite fully the connection between these two conditions is chiefly of interest because it shows how seldom phthisis bulbi and choroidal sarcoma coexist. At the same time he gives us an insight into the frequency of choroidal sarcoma in general. Investigation showed that in the years between 1861—1898, in which time 92,000 patients had been seen in the Breslau clinic, only thirty two cases of sarcoma of the choroid had been observed. Among these thirty-two cases there were only two where the co-existence of phthisis bulbi was demonstrable.

**The Anaesthetic Action of Tropacocain Upon the Cornea and Conjunctiva.**

HILBERT, DR. RICHARD, Sensburg. (*Ophthalmol. Klinik*, 20 Juni, 1899.) Hilbert discusses more particularly the advantages which this product possesses over cocain. 1. It produces no haziness of the cornea. 2. It does not decompose and is slightly antiseptic. 3. It neither elevates intraocular tension, nor dilates the pupil. 4. It is less poisonous and in small doses produces no general toxic symptoms.

The solution employed by Hilbert was a 5 per cent. one. The action of this agent consists not only in paralyzing the endings of the sensitive nerves but also the vasomotors as is evidenced by the marked hyperaemia of the conjunctiva. Anaesthesia starts in a few seconds. It



seems to be an absolutely satisfactory anaesthetic for operations upon the cornea and even for iridectomy. It is less satisfactory for operation upon the conjunctiva as was shown in operations on trachomatous granules. Hilbert has found that the irritating properties of the solution were materially lessened by adding a small quantity of sodium chloride. It is evident from his conclusions that Hilbert has allowed cocain to be supplanted in his work by tropacocain.

**The Present Status with Regards the Treatment of Detached Retina.**

DE WECKER, L. (*Ophthalmol. Klinik*, 20 Juni, 1899.) The author thinks that the tendency of most operative procedures for the relief of retinal detachment is really to make the condition worse. Such operations are accompanied necessarily with injuries to the retina, choroid, sclera and vitreous body. De Wecker is an adherent of the view advanced by Raehlmann in 1876, that the detachment is caused by disturbances in the exosmotic currents or streams which pass through the retina. As a result we would have an influx of water to the vitreous which is already overloaded with salts. Upon the basis of this theory, de Wecker has sought to divert these currents outward by injecting salt solutions beneath the conjunctiva. He has been employing this method for twelve years. The injections should be made right into Tenon's capsule. Recently he has been employing solutions of gelatine because they are less painful. The following is his formula: Physiological salt solution, 100.0, and white gelatine, 3.5. This is to be sterilized in an autoclave at a temperature not over 105°. He does not claim to have cured all his cases, but certainly to have benefitted all. He regards the method as harmless, which is undoubtedly the first desideratum. These injections should be made twice a week and a syringe-ful should be injected at a time. Usually the patients are given sublimate pills internally. The author furnishes no statistics.

**A Contribution to the Clinical Symptomatology and Histology of Primary Myxosarcoma of the Optic Nerve.**

**Kroenlein's Operation.**

AXENFIELD, PROF. THEOD., and BUSCH, DR. F. (*Archiv. für Augenheilk.*, April, 1899.) The authors report a very



instructive case of myxosarcoma of the optic nerve which was operated upon according to Krönlein's method. The subject was a girl of eleven years, who had suffered for several months with periodical attacks of headache which extended from the temples over the entire head. There was noticed at the same time an increase in the size of the right eye. The attacks were usually associated with chill and fever. Family history good. Examination showed that the right eyeball was more prominent than the left. There was no limitation in the visual field, and when the hypermetropia was corrected her vision was normal. The ophthalmoscopic examination was negative. Movements of the eyeball good and perfect pupillary reaction. Two weeks after she was first seen she had an evening temperature of 39.4 and along with this a swelling behind the angle of the left lower jaw. Three days later the exophthalmus was not so pronounced, but three days afterward it had again increased and was associated with pain in the right eye and with nausea. Fever had kept up all this time. Three days later the temperature became normal and staid so. A general examination and an examination by a laryngologist revealed nothing abnormal. Ophthalmoscopic examination, however, showed beginning choked disc, but still the vision remained normal. Krönlein's operation was performed and a tumor of the nerve was located and found to nearly fill up the apex of the orbit. The nerve was severed close to the foramen and also close up to the sclera. The operation was perfectly successful in removing the tumor and saving the eyepall. It is interesting to note the fact that among eleven cases operated upon after the older method there were only two cases where the eyeball was retained in its normal size, while the three cases which were operated upon according to Krönlein's method were left with eyes normal in size and appearance. The authors speak of this operation (Krönlein's) as being comparatively harmless. They lay great stress upon operating early in this class of cases after it is clear that neither mercury nor potash will do good. An analysis of the clinical symptoms of the affection is then given. The authors summarize their interesting communication by emphasizing these points in the clinical and microscopic condition of the patient. 1. Periodic fluctua-

tions in the exophthalmos together with fever. 2. Almost normal vision and field on the day of the operation after eight months of the exophthalmos in spite of the high degree of involvement of the optic nerve as was shown by the microscopic examination. 3. The progressive improvement of the paralysis of the eye muscles which appeared after the operation.

#### **The Ultimate Results in the Treatment of Glaucoma.**

(From the private practice of Prof. Haab, of Zurich. Compiled by Dr. Sidler-Huguenin, Assistant *Beiträge zur Augenheilkunde*, Heft. 32.) The author has divided the cases into three categories: 1. Inflammatory glaucoma (acute and chronic). 2. Non-inflammatory glaucoma (glaucoma simplex). 3. Hemorrhagic glaucoma. The following is a résumé of the most important points in his article:

In more than half of the cases of acute inflammatory glaucoma iridectomy was followed by complete cure and the cases not cured were invariably benefitted. According to his statistics it will be observed that in 62.5 per cent of acute cases and in 60 per cent. of chronic cases (i. e. inflammatory) a cure was obtained. In only three cases was iridectomy followed by malignant glaucoma, once after acute glaucoma and twice after glaucoma simplex. As regards visual results a study of his statistics shows that after operation for acute and chronic inflammatory glaucoma useful sight was obtained in 91.47 per cent. of cases. This speaks in no uncertain terms in favor of iridectomy.

As regards glaucoma simplex this interesting fact is to be noted, namely, that in 78.41 per cent. of cases after iridectomy and in 60 per cent. after sclerotomy the vision which was present before the operation was either improved by the latter or remained the same. While as an operative procedure he puts iridectomy way ahead of sclerotomy, still he thinks the latter a valuable operation and one that has its indications. He is of the opinion that miotics should always be employed along with the sclerotomy. What he says of hemorrhagic glaucoma, is interesting, and in this condition he prefers sclerotomy. The statement that in 20 per cent of such cases, cure can be

obtained, and in 40 per cent. the condition before the operation maintained is vindicated by his statistics. These statistics show, by the way, that miotics alone will not relieve the condition, and that sooner or later operation will have to be performed. On the whole his results are better than most glaucoma statistics, and this he explains by telling us that all the cases were private patients and belonged to the better class of the population. They had come promptly to him as soon as they noticed visual disturbance, and after the operation they could forego work and keep themselves under his eye, a thing which the poor man could not do.

**Operation for Myopia. and Detachment of the Retina.**

FISCHER, E., Dortmund. (*Centralbl. f. prakt. Augenheilkde*, March, 1899.) Considers the operative treatment of myopia with special reference to retinal detachment. He reviews the report by Fröhlich in the "Archives," which stated that of 572 operated eyes, 3.3 per cent. were lost by post-operative detachment and 2.2 per cent. by infection, and that of 1280 myopic eyes in 759 patients not operated upon only 16, or 1.25 per cent., were lost by detachment, and, he contends that it is not fair to compare these and say that if we operate we may expect a loss of 5.5 per cent., while if we do not it will only be 1.25 per cent. Post-operation detachments will practically all occur within a year, and hence are all accounted for by the operator while those which occur in the ordinary course of a progressive myopia may not be seen again by the same oculist and of the 16 referred to, some probably were deserters from other physicians, coming to Prof. Fröhlich only for his opinion about their hopeless condition. He suggests that if it be true that the risks of detachment during the first 12 months following an operation be as 11 to 1 when compared with a similar non-operated eyes for the corresponding period, the risks, if further compared during the next 20 or 30 years, will show an increase ratio.

He advises against operating on both eyes at one sitting, saying that he has frequently done this with cataracts but considers the risk in myopia too great.

**When Does Choroidal Rupture Arise from Temporal Shots?**

NORMAN, HANSEN, Copenhagen. (*Centralbl. f. prakt. Augenhkde*, April, 1899.) Reports 8 cases of shot wounds of the temple, with a brief description of the injuries produced, and concludes that choroidal rupture arises from temple shot wounds only when the projectile strikes the eyeball directly, or by splintering the floor of the orbit causes the broken bone to produce a contact lesion.

**Interstitial Fibromatous Degeneration of the Retina.**

GOLDZIEHER, W., Budapest, (*Centralbl. f. prakt. Augenhkde*, March, 1899), describes a very interesting case, showing these changes in both eyes. The patient, a strong, otherwise healthy girl of 23 years, was seen first in the clinic at Prague by Herrenheiser, when the R. E. was blind and L. E. just beginning to show changes. She consulted Goldzieher 2 years later, at which time the condition was as follows R. E. divergent; lens, cornea and iris, normal. With the ophthalmoscope one gets a grey reflex from the degenerated retina, which protrudes almost to the posterior surface of the lens and is marked by many furrows and hillocks and does not wave with motions of the globe and is covered with enlarged blood vessels. The condition was strongly suggestive of pseudoglioma. In the left eye he had the opportunity of studying the advancing growth. The media were clear, papilla swollen and central vessels enormously enlarged. The smaller vessels formed in little knots on the protruding "hunches" and these were connected in the form of a rosary by a girdle of white plaques. Central v = 1-10. Tn.

# ABSTRACTS FROM RECENT FRENCH OPHTHALMIC LITERATURE.

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QUARTER ENDING JUNE 30, 1899.

## **A Case of Primary Tuberculosis of the Skin of the Eyelid and of the Lacrymal Sac: Spontaneous Cure.**

STRZEMINSKI, Wilna. *Recueil d'Ophthalmologie*, April, 1899.) The patient was a retired army surgeon sixty-seven years of age. Almost all of the left upper eyelid was covered with small ulcers, each having a dirty base with gray colored ragged edges. With the exception of two, all of the ulcers were superficial. They were all almost painless. One of the deep ulcers was situated in the upper eyelid a little below the supraorbital notch and penetrated to the periosteum, while the other was located on the side of the nose.

The bases and sides of the ulcers were flabby. The eyelid was inverted and its tissues were soft and swollen. In places the secretion on the ulcers formed dense crusts. A fistula of the lacrymal sac was also present. There was no glandular enlargement, nor had there at any time been any fever. In addition, there were traces of an old trachomatous condition.

A diagnosis of tuberculosis was made which was afterwards confirmed by a number of physicians. Unfortunately, the patient would not permit the making of any culture experiments. No other tubercular foci could be seen, though the man was poorly developed and badly nourished. The patient refused any other treatment than the employment of an antiseptic wash. Corrosive sublimate in the strength of one to five thousand was prescribed for this purpose.

At the time that the ulcers had almost healed it was discovered that both the cornea and conjunctiva of the affected eye were anaesthetic and that the skin in the region which was supplied by the supraorbital nerve as well as that of the eyelid and nose in the affected region were somewhat insensitive.

After a period of eleven months' time the man was apparently cured; this in spite of the fact that he had not employed any treatment except that of the bichloride of mercury wash and that he had remained in the city.

#### **Amputation of the Anterior Segment of the Eye and the Indications Therefor.**

BOURGEOIS, Reims. (*Recueil d'Ophthalmologie*, April, 1899.) The method followed by Bourgeois is to remove the anterior segment of the eyeball by means of a von Graefe knife which is made to cut on a line about two to three millimeters back of the limbus of the cornea. To do this he enters the knife on the outer side of the ball at the level of the horizontal diameter of the cornea. With a delicate saw like movement he frees an upper flap. This is turned down and the section of the area to be excised is completed. The wound is closed by three sutures. This procedure makes a somewhat smaller stump than the older methods but the healing is much more rapid. The indications for the operation are: total corneal staphyloma; absolute glaucoma; burns that have destroyed the transparency of the cornea, with or without synechiae; traumas which have irremediably destroyed vision, and in which there is enough tissue of the eye left to make a good stump; and lastly (with the greatest restriction) anteriorly situated malignant tumors.

#### **Wounds of the Eye Caused by Chestnut Burrs.**

DESCHAMPS, Grenoble. (*Annales d'Oculistique*, April, '99.) Deschamps states that while clubbing chestnut trees laborers frequently receive direct blows upon the cornea by the burrs which are not seen sufficiently soon to close the eyes. The spin eof the burr always breaks off shor tand it is with the greatest difficulty that it is removed. Frequently owing to the infection which the burrs cause such wounds prove most destructive. At times they give rise to but slight

inflammatory reaction. The author has found that the best way to remove them is by means of a pair of fine forceps with very accurately approximated points. To do this properly a certain amount of corneal tissue enclosing the end of the spine is pinched up. If this is impossible a Bowman's needle should be used to elevate the end of the burr. After the spine has been removed the wound should be sterilized as well as possible by introducing a stop needle which has been previously dipped in a solution of cyanide of mercury and turning the needle around. If any of the spines penetrate into the anterior chamber they should be the last to be removed, as the aqueous humor will escape through the opening which is left after their removal and the cornea will in consequence become wrinkled. This escape of fluid, the author says, has its advantages, however, as the flushing of the wound frequently prevents infection.

**Notes on Two Cases of Retro-bulbar Neuritis.**

VALUDE, Paris. (*Annales d'Oculistique*, April, 1899.) Five days before consulting Valude the first of these patients noticed that when he arose in the morning he was totally blind in the right eye. As the left eye was hypermetropic to the amount of five diopters and the right was emmetropic the trouble was immediately noticed. There were no other symptoms of any kind. As the patient was hysterical according to his own statement, and as he had been much worried by the loss of a large amount of money a tentative diagnosis of hysterical amblyopia was made. Ten days later after returning from a long trip the patient again presented himself for examination. At this time the vision had commenced to return, equalling one-hundredth of normal. A large central scotoma which had been determined at the time of the first visit was considerably reduced in size. The ophthalmoscope revealed the greatest change. Whereas at the first visit there was not the slightest sign of any diseased condition, an optic neuritis with papillary edema and ischaemia in the macular region of the retina could now be seen. The left eye was practically normal. At this visit it was ascertained that the patient had had a chill the evening before the primary blindness, but that there were not any especial localiza-



tion signs situated about the head. The patient stated that for nine days after the blinding, the eye had not been sensible to antero-posterior pressure. At the same time the movements of the eye had been painful.

There was an absence of headache, vomiting, fever and all general symptoms.

Blisters were applied and the eye was bandaged. Salicylate of sodium was administered internally.

In three weeks' time vision had become normal and the patient complained of nothing but a slight amount of dazzling and some asthenopia. The optic disc was somewhat pale.

The author calls attention to the length of time which elapsed between the first appearance of the amblyopia and the swelling of the nerve-head and the onset of pain; the fact that the disease was monocular; and that there was a complete return to normal vision.

The second case, although not typically one of retrobulbar neuritis, was, nevertheless due to some trouble situated in the optic canal. The patient was a woman of thirty-five years of age who had been twice married. During her first marriage she had had a miscarriage and a stillborn infant. She had another miscarriage by her second husband.

The first ocular symptom that she noticed was a right-sided ptosis with epiphora, followed about a month later by a violent headache and a "blindness" of the left eye. The vision of her right eye was normal, but that of the left had fallen to one-fortieth of normal. The fundus of the right eye failed to show any lesions. The optic nerve-head of the left eye was markedly inflamed and edematous. Three days later there were numerous hemorrhages into the left retina. The iris of the left eye responded to accommodative efforts but failed to react to light-stimulus. A few days later small diffuse hemorrhages in the retinal vessels of the left eye had taken place, giving the observer the impression of an albuminuric or a diabetic retinitis. Examination of the urine yielded negative results.

At the time of writing the paper the violent headaches still persisted, while vision in the affected eye was abolished.

Subcutaneous injections of cyanide of mercury, and



oid of potassium were administered. In five months time, during which all cephalalgia had disappeared, the headaches recurred and the left eye showed signs of an optic-nerve atrophy. At this time the sense of smell suddenly disappeared. Six months later the condition of affairs had undergone but little, if any, change.

The author believes that the ocular lesions were due to a syphilitic periostitis of the left side with pressure upon the left optic nerve and extension towards the olfactory nerves, and that a slight disturbance of the right eye which was concomitant was also syphilitic in nature.

#### **The Treatment of Trachoma by Tarsostrophy.**

BITZOS. (*Annales d'Oculistique*, April, 1899.) Bitzos teaches that trachoma invades the tarsus and that intervention which does not reach this part of the eyelid is frequently futile. For some time on this account he performed the operation of tarsectomy, but he was subsequently led to modify the operation because of resulting deformity.

At present he resects the tarsus, cleanses it from all adhesions and replaces it with its antero-posterior faces reversed. He then draws the conjunctiva down over the newly made posterior face and fixes it in position by means of five stitches, three of which pass through the cartilage—and all of which are tied on the outer side of the eyelid. A dressing is applied for twenty-four' hours time, after which it is discarded and the eye is washed five or six times a day with a boric acid solution. Atropine in the strength of one part to one-hundred is instilled every two hours. If there is any irregularity along the edge of the eyelid that has been produced by retraction of the sutures, the stitch giving rise to the damage is removed. As a rule all of the sutures are removed on the second day. The wash and the instillations are employed in gradually diminishing frequency for from fifteen to twenty days longer. If any granulations protrude from the lips of the wound, they are excised with a scissors. Should some of the trachomatous tissue remain after the operation it will as a rule, quickly disappear. If it does not it may be removed with a snip or two of a scissors or touched with a cautery or nitrate of silver.

**A Case of Double Congenital Luxation of the Crystalline Lens.**

WESTHOFF, Amsterdam. (*Annales d'Oculistique*, April, 1899.) One of the most interesting features of this case is the fact that the patient, by inclining his head at a certain angle, was able to read fairly well. This was due to the fact that the lens was movable, and by this manœuvre a portion of it could be brought into the line of vision. As the zonule was relaxed the lenses were in a condition of supposedly constant total accommodation.

**Conjunctival Hypertrophy with Special Localization in a Case of Spring Catarrh.**

MANDONNET, Clermont-Ferrand. (*Annales d'Oculistique*, April, 1899.) Mandonnet calls attention to a peculiar form of this disease that fell under his notice. The ocular conjunctiva was apparently sound. The palpebral conjunctiva was alone diseased.

The interesting feature was the presence of a series of excrescences that were situated along the border of the lower eyelid. The conjunctiva itself was unduly hypertrophied at the level of the tarsus of the lower eyelid. The growths were removed with a pair of scissors, their surfaces being curetted. An ointment of ichthyol and an acetic acid wash were prescribed with marked benefit.

**Primary Tumors of the Cornea.**

LAGRANGE, FELIX, Bordeaux,. (*Archives d'Ophtalmologie*, April, 1899.) Lagrange records a case of primary tumor of the cornea which came under his notice. At the same time he has presented us with a new classification of such growths. He divides them into two groups, viz: tumors which are developed from the connective tissue and the endothelium; and those which are developed from the epithelium itself. The first group includes the myxomata, the fibromata, and the pigmented and non-pigmented sarcomata. Under the second group fall the epitheliomata in general (including the epithelial plaques and the carcinomata). His own case, he says, falls under the latter division, being in its histologic construction situated midway between the epitheliomatous and the carcinomatous varieties of tumor growth.

**A Second Contribution to the Study of Neuralgias and Tics of the Face Considered in their Relationship to Pathological Conditions of the Lacrymal Passages.**

BETTREMIEUX, Roubaix. (*Archives d'Ophthalmologie*, April, 1899.) Bettremieux reports that he has cured a stubborn case of tic douloureux by the passage of lacrymal sounds. Two years after this the patient returned, suffering from the former malady and was again relieved in a similar manner.

Since that time the author has cured in the same way a case of facial neuralgia and one of facial spasm. He employs a number two sized sound with a round or an olive pointed tip. This instrument he thoroughly sterilizes in some hot oil. He says that it is not necessary that any gross lesion of the canal should be found to warrant the performance of the procedure. He attributes the condition rather to a change in the mucous membrane which lines the canal. This, he asserts, is favorably affected by the passage of the sound.

**Method of Insertion of the Zonular Fibres upon the Crystalline Lens and the Interrelationship of These Fibres.**

TERRIEN, Paris. (*Archives d'Ophthalmologie*, April, 1899.) This paper is practically a continuation of an article that was written by the same author on the Structure of the Ciliary Portion of the Retina and of the Fibres of the Zonule of Zinn (an Abstract of which appeared in the *Annals* for January.)

He regards the zonular fibres as being a direct continuation of Müller's fibres.

According to his last work on the subject these fibres separate into two bundles, one going to the anterior and the other to the posterior surface of the crystalline lens. Throughout the meshes of the fibres the aqueous humor is able to pass. The fibres divide the posterior chamber into a prezonular, a zonular, and a postzonular space. The anterior and the posterior fibres are those of accommodation, the middle band being simply fibres of suspension.

**Cavernous Elephantiasic Lymphangioma of the Eyelid in a New-Born Child.**

VAN DUYSE, Gand. (*Archives d'Ophthalmologie*, May,

1899.) The tumor-growth studied in this case was of the following dimensions: its transverse diameter was six centimeters long; its vertical diameter was four and a half centimeters high; and its antero-posterior diameter was one and three-quarters centimeters in length. The growth occupied almost the entire lid—area and in depth extended to the tarsus. It apparently embraced some of the fibres of the levator palpebrae and the orbicularis muscles. Some of the muscle fibres were atrophied. The neoplasm was filled with cavities, the linings of which were composed of endothelium that was not unduly thickened.

The patient died of an attack of acute gastro-enteritis before operation could be resorted to.

#### **Nature and Treatment of Zona.**

ABADIE, Paris. (*Archives d'Ophthalmologie*, May, 1899.) Abadie, who has been doing a great deal of original work within the past two years on the relationship of the cervical sympathetic to certain diseases of the eye, now attributes the condition known as zona to an irritation of the sympathetic nerves with a consequent vaso motor dilatation of the vessels that are controlled by the affected nerve. He has been led to this opinion by the localization areas of the disease. For example, he says, zona ophthalmica is not limited to the region of the fifth nerve, but it is related rather to one portion of the nerve distribution. If, on the other hand, the blood supply of the affected region be traced it will be found to arise from a single artery or from one of the branches of the artery. The same rule holds good in so-called shingles in which the condition limits itself to the region which is supplied by the aortic branches, and does not extend to the region which is supplied by the branches that are given off from the subclavian.

#### **The Phase Through which the Treatment of Detachment of the Retina is now Passing.**

DE WECKER, Paris. (*La Clinique Ophtalmologique*, May 25, 1899.) De Wecker decries the performance of operative treatment in detachment of the retina. He confines his radical form of therapy to subconjunctival injections combined with Samelsohn's method in cases of well-to-do

patients, or the use of pills of bichloride of mercury among the poor. The form of serum which he injects consists of three and a half parts of gelatine in association with one hundred parts of a physiological salt solution. The explanation of the good results obtained by this method, he says, is offered by Raehlmann's theory, which assumes that detachment of the retina is caused by the large amount of fluid that is attracted to the vitreous humor which is surcharged with salt; this excess of salts being neutralized by the serum.

**Orbital Meteroplasty.**

VALUDE, Paris. (*La Clinique Ophtalmologique*, May 25, 1899.) After numerous experiments upon the lower animals and as a result of the findings of three operative cases, Valude has come to the opinion that a thoroughly sterilized glass or metallic ball is the best article to insert into the orbital cavity following an enucleation.

# ABSTRACTS FROM RECENT SPANISH AND PORTUGUESE OPHTHALMIC LITERATURE.

BY A. B. HALE, M. D.,

CHICAGO.

## **Panophthalmitis of Urethral Origin.**

MANSILLA (*Spanish Medico-chirurgical Academy*, Session of January 20, 1899.) reports a case on whom internal urethrotomy had been successfully performed, November 14, 1898. Large sounds were introduced easily. The urine contained pus before operation, and blood and pus afterward. Four days after the operation—there having been no eye trouble previously—the patient noticed that the vision in the right eye was diminishing, this increased for three days, when pain began in the eye, temple and forehead. Vision was reduced to counting fingers at 20 centimeters. On examination the pupil was found dilated and rigid, the iris discolored, there were exudates in the anterior chamber, the interior was cloudy, there was chemosis, and pain on pressure at the ciliary region. Panophthalmitis was the result, sclerotomy was performed and much pus released. Twenty days afterward there were signs of pneumonia; four days after the pneumonia there developed a phlegmon of the scrotum. All this proved the metastatic origin of the panophthalmitis.

## **Sarcoma of the Orbit. Epithelioma of Conjunctiva and Cornea. Leprous Patches of Conjunctiva and Cornea.**

MANSILLA (Reports of *Academia Medico-Quirurgica Espanola*, December, 1898.) reports to the literature three cases. The first was a sarcoma in the orbit of a woman 33 years old, producing exophthalmos and complete ulceration of the cornea. Enucleation and thermocautery seemed to produce a cure. The second was a lupus at the inner canthus, attached to conjunctiva. It was removed with success. The third case showed leprous ulcers in both eyes of a countryman 26 years old with healthy antecedents. For the last three years they had invaded the

pericorneal tissue, and had advanced, in spite of all local treatment. Local anesthesia was complete. Excision and subsequent thermocautery removed all symptoms and signs.

#### **Irido-Choroiditis with Glaucoma.**

CHACON (*Gazeta Medica de Mexico*, No. 10, May 15, 1899.) reports a case of irido-choroiditis with glaucoma presenting unusual symptoms. A girl of 16, rather hysterical and of a neurotic family, was attacked with very severe pain in the eyes; the iris was normal, pupils reacted to light and there were no signs of injection. No treatment seemed of service, not even iridectomy. Finally de Wecker's sclerotomy was performed, which gave the first relief. Miotics afterward (persisted all through), reduced the symptoms of inflammation but left all the signs of an irido-choroiditis. Especially noticeable were fine pigment layers over the lens, so that the fundus was hardly visible. Ch. can give no explanation of the origin of the trouble.

#### **Relative Seriousness in Europe and America of Ophthalmic Neonatorum.**

FERNANDEZ, SANTOS (*Gazeta Medica de Mexico*, No. 11, June 1, 1899.), has compiled tables to show that this disease in America (at least in Spanish America) is not so disastrous or serious in hot countries as it is in Europe. Chacon, of Mexico City, is of the same opinion.

#### **Sequelæ of Lagrippe in the Eye.**

RAMOS (*Gazeta Medica de Mexico*, No. 9, May 1, 1899.) discusses such affections as somewhat different from the usual foci of the disease. The three ordinary characters of grip invasion are, (1) cranial, (2) thoracic, and (3) abdominal. Apart from these, the grip poison may invade the ocular tissues, when R. notices: (1) edema of the lids, due neither to kidney or heart lesion; (2) corneal ulcer; (3) edema of the conjunctiva with great pain. All of these symptoms (sic!) seemed to demand direct local treatment, but all were cured with antigrippal remedies.

#### **Glaucoma and Its Treatment.**

OCANA, LAPEZ, Madrid (*Gazeta Medica Catalana*, Vol.

22, 1899.), refers to the difficulties often arising in the diagnosis of glaucoma. He thinks iridectomy is useless in many cases, while medical treatment is on occasions very useful. A certain diagnosis does not by any means demand operation, nor does operation make any easier to conquer those difficulties which the practitioner often meets before or after diagnosis and all through the treatment.

#### **Cataracta Nigra.**

TORO (*Anales Medicas de Cadiz*, No. 7, 1899.) discusses black cataract in general with particular reference to one case in his care. This differed from the usual appearance, and the ophthalmoscopic examination gave doubtful results in many ways. So much so that even at the time of operation the surgeon (Toro) feared that perhaps he did not have a cataract to deal with. The delivery showed a lens of a unique opacity never before described, and certainly not such as his ophthalmoscopic examination had led him to expect.

#### **Foreign Bodies Extracted from the Crystalline Lens.**

CARRILLO, Cardova (*Revista Medica de Sevilla*, Vol. 32, No. 4, 1899.), reports three cases of extraction of foreign bodies from the lens. The first was a piece of steel which lodged in the lens and was extracted before the traumatic cataract had become manifest. The lens was afterward delivered with success. The second was a piece of quartz which had lodged in the periphery of the lens and was extracted after several days with success. The third case had already a traumatic cataract developed and when the lens was delivered, the foreign body was found in its center, well nucleated. All three cases recovered with useful vision.

#### **Reflex Ulcerous Keratitis.**

SARIGUER (*Revista Medica de Sevilla*, Vol. 32, No. 6, 1899.) relates a case of a young man of good constitution who suffered from an ulcer in the lower half of the cornea (left eye) accompanied by conjunctival injection and periodic pain. No treatment, although all usual methods were attempted for several months, did any good. Finally an unhealthy canine tooth was extracted, after which, with no change from the last treatment, the corneal ulcer healed rapidly.



**New Growths in Orbit or Lids.**

CASTRASANA, Madrid (*El Siglo Medico*, No. 2370, May 28, 1899.), from a study of several cases of sarcoma of the lids and orbit, concludes with the following opinions: (1) In orbital or intraorbital tumors exophthalmos is a symptom of great importance, since with it we may conclude with great accuracy that a tumor is present which has its seat near or in the orbit. (2) When the exophthalmos is directly forward the tumor is in or near the optic nerve. When the exophthalmos is outward or downward the tumor probably is in the lid or side of the orbit. (3) Mere evisceration is not enough. We must cut out everything radically.

# ABSTRACTS FROM CURRENT DUTCH LITERATURE

For the Quarter Ending June 30, 1899.

BY

WENDELL REBER, M. D.,

PHILADELPHIA,

ASSISTED BY

E. E. BLAAUW, M. D.,

BUFFALO, NEW YORK.

**Abstract of the Transactions of the 14th Meeting of the Netherlands Ophthalmologic Society at Rotterdam, Dec. 11th, 1898. Twenty-five Members and 4 Guests; Presided Over by Dr. van Moll.**

SNELLEN, PROF., in an extended communication on "Glass Eyeballs as Ocular Protheses" gave a very interesting account of the evolution of the "glass eye" of today from the Ecblephari and Hypoblephari of the ancients. The first were plates or partial masks on which was painted an imitation of the sound eye and eyelids, and this was worn before the empty orbit. The latter were really a kind of artificial eye inserted between the atrophic eye and the eyelids. The author has been so impressed with the well known disadvantages of the commonly used hollow shell that he had Messrs. Mueller at Wiesbaden make for him hollow double walled shells, of 3 different sizes and shapes, to be used as follows:

1. The original shell-form eye for atrophic bulbs and after Mules' operation.
2. A double-wall, shell-form eye for cases in which a very small stump remains.
3. A hemiglobular shell-form eye for use in cases in which the conjunctival sac is unusually roomy.

**Senile Hypermetropia.**

STRAUB, PROF. From a study of 3,700 presbyopic eyes, Straub constructed a series of curves which show that by the 50th year more than half of what are ordinarily viewed as normal eyes have become hypermetropic from 1.00 to 1.50 diopters.

**Esophoria as the Cause of School Myopia.**

REDDINGIUS, DR. R. A. Reddingius showed a girl with marked asthenopia and beginning myopia all of which he ascribed to an esophoria for 20 inches, notwithstanding that the child enjoyed perfect binocular vision and had never squinted. Reddingius claims that the present explanation of esophoria on the ground of insufficiency of the externi should be abandoned, because, if normally innervated, muscles that are otherwise unaffected are certainly normal, wherefore we can only speak of "insufficiency of innervation." Esophoria can be a symptom of, 1. Uncorrected hypermetropia; 2. Accommodation paresis; 3. Single or double abducens-paresis; 4. Divergence insufficiency, and 5. Convergence excess. In the case under consideration condition No. 1 was out of the question, as the static refraction of the eye was —O. 75 D. and —O. 50 D. Condition No. 2 was impossible because at 20 inches the esophoria was greater than for infinity. Nor was accommodation paresis operative, for there was 14 D. of A. in each eye; abducens paresis was thrown out by the fact that both eyes had a temporal rotation of 60°, while 40° to 50° is normal. Hence the diagnosis in this case rested between divergence insufficiency and convergence-excess. As the prism divergence was 11°, and the maximum of convergence 43 meter angles, R. puts it down as a case of convergence excess, and argues that an esophoric with binocular vision needs more than a normal divergence. When divergence-insufficiency causes esophoria, innervation to the external recti is increased, while the pressure of the externi on the globe remains unaffected. When, on the contrary, esophoria is due to convergence-excess, this excess must be met by increased divergence, seeing which the globe is heavily pressed between the internal and external recti more than normally. This is the condition assumed by Reddingius to be present

in his case, and as the scleras of children yield readily, he explains thus the asthenopia and progressive myopia. If the brain were to give up the struggle and strabismus convergens to supervene both the asthenopia and the myopia would be arrested. But it is in this class of cases that binocular vision is most pertinaciously clung to, whence it follows that while convergence-excess (Pari-naud), plays a part in esotropia, divergence-insufficiency is probably even more often causative. To correct such conditions Reddingius orders plus glasses with prisms *bases in* principally for school use. [This is not unlike Prentice's repression treatment of esotropia—EDITOR] Reddingius' idea is that divergence is the regulator in binocular vision.

DISCUSSION.—Dr. Nicolai preferred to adhere to the older ideas in reference to esotropia using prisms bases out when the necessity for them arose. In this opinion he was joined by Dr. Straub, who protested against the general adoption of such measures as Reddingius advocated in the optical treatment of convergent squint on purely theoretic grounds, especially when they are so different from those commonly used. Van Moll, too, was struck with the confidence Reddingius reposed in his ideas and could not agree with him.

#### Pupillometry.

LANS, DR. L. Q. J., objects to all the well known pupillometers that they darken the visual field in front of the patient more or less. Schirmer's device does so less than any other he knows, but even this instrument is defective. He very aptly says that "it is easier to observe the pupillary movement than to give an absolute value of the constant width of the pupil," and then goes on to state his belief that inasmuch as 0.49 (Donders) to 0.33 (Vintschau) of a second are consumed in the reaction of ordinary pupils, flash-light photography, which takes but  $\frac{1}{8}$  of a second, is the only absolutely true measure thus far devised. The patient's pupils must first have become adapted to darkness by a 15 minutes stay in a dark room, and the results are influenced by first, the age of the patient; and, second, the refractive status.

Five measurements of Lans' own right eye after varying

periods of adaptation in absolute darkness showed the following:

Measure- ment.	No. of minutes in dark room.	Horizontal diame- ter of pupil.
No. 1.	10 minutes	7.5 mm.
" 2.	15 "	8 mm.
" 3.	15 "	7.82 mm.
" 4.	15 "	7.9 mm.
" 5.	20 "	7.80 mm.

Refraction of eye myopia of 0.50 D. Age 29 years.

These measurements agree in the main with those of Gartner and also of Bordier, the originators of the method.

#### **Chloropsia.**

LANS, DR. L. Q., reported an instance of unilateral green vision studied in a 47 year old man who was excessively addicted to both alcohol and tobacco. Color perception was normal in the left eye and subnormal in the right (affected) eye in the macular region of which was found a small area of choroiditis. The green vision was thought to be due to exudation about this choroiditic area as its character varied from week to week.

#### **Skiascopic Phenomena of Lenticonus Posterior.**

GORI, DR. This paper cannot be fairly dealt with in abstract.

#### **Plastic Operation for Rodent Ulcer of the Inner Canthus Involving the Nasal Cavities**

GORI's case occurred in a 63 year old man in whom a rodent ulcer which had invaded the tissues at the inner canthus was treated by plastic operation, but relapsed one year later at the nasal wall of the orbit necessitating secondary procedures that laid bare the ethmoidal cells so that flaps had to be taken from the forehead from in between the eyebrows. The final result was quite satisfactory but the man died suddenly a few months later and as no section was done, opportunity to establish any possible relation between the local and internal malady was lost.

#### **A Prophylactic Against Ophthalmia Neonatorum.**

GORI recommended to the authorities at Breda that in the marriage book which young married couples receive from the magistrate, there be inserted printed matter

admonishing the prospective parents to directly call in medical aid at once for even the slightest affection of the eyelids of the new born. He further counsels making it obligatory for all midwives and dry nurses to distribute such printed matter to each and all of their patrons. These recommendations it is said have been put in force in the town of Breda.

#### **Relapsing Erosion of the Cornea.**

NICOLAI, DR., reports such a case occurring apparently without cause in a middle aged female, and giving rise to extreme photophobia and cutaneous hyperaesthesia in the ocular region. Recovery was delayed for fully five weeks.

#### **Melanoma Iridis.**

BOUVIN refers to a 36 year old man, who, 22 years before, had his left eye wounded with a stick. Ten months later sympathetic ophthalmia developed in the fellow eye for which extirpation of the right eye (then blind), was done. Twenty years later two tumors springing from the iris were noticed, the larger one from the upper temporal quadrant, the smaller one from the upper nasal quadrant, both presenting all the clinical features of melanoma iridis. Dr. Bouvin contends that melanomata of the iris are benign tumors.

#### **Changes in the Appearance of the Visible Subconjunctival Vessels.**

JITTA, DR. N. JOSEPHUS, opposes the view formerly held by Donders and van Woerden that color changes in the subconjunctival vessels are solely due to the fact that the conjunctiva is a semiopaque medium; and from an extensive clinical and experimental study comes to the conclusion that the violet hue of the episcleral vessels, be they arteries or veins, can only be explained by the fact that the conjunctiva, which is a translucent medium, takes on a bluish hue under incident light and that the blending of this blue with the red of the injected vessels gives the purplish cast seen in episcleral and pericorneal injection.

#### **Erythropsia.**

KOSTER, Leyden (*Weekblad van het Nederlandich Tydschrift voor Geneeskunde*, No. 3, Jan. 21, 1899.), has been making an experimental study of erythropsia, in

which he has been assisted by Dr. Birkhoff, who took the trouble to cover his eyelids close down to their margins with a smooth even layer of soot in order that all possible light might be shut out. As a result of these experiments he is obliged to reverse his former theory as to the origin of erythropsia and has come to believe that red vision is due to the reflection of light through the sclera and blood-laden choroid. He feels that these findings also disprove the hypothesis of Snellen that erythropsia is the result of a red coloration of the retinal periphery by means of the light which reaches it through the closed eyelids.

**Herpes Zoster Ophthalmicus.**

KOSTER. (Ibid, No. 9, March 4.) An instance of this rare disorder came under the observation of Dr. Koster in the person of a medical student, 22 years old, whose first symptoms were ocular pains and photopsiæ. A few days later the cutaneous eruption appeared when the globe showed intense superficial injection, the iris was discolored, the pupil irregular and slow in reaction, and the cornea diffusely opalescent centrally. There was no loss of corneal epithelium, and the cornea retained its sensibility. The whole picture was one of parenchymatous keratitis and perhaps irido-cyclitis, and under the classic therapy of these affections the patient made a complete recovery. The case differs from the usual course in that no vesicles appeared on the cornea.

**Movement of Globe After Use of Plus and Minus Lenses in Astigmatism.**

SCHOUTE, Amsterdam (Ibid, No. 10, March 11, 1899.), refers to cases of irregular astigmatism consecutive to corneal ulcer in which a strong plus glass produced downward and outward rotation of the globe and a strong minus glass produced reverse movement.

**Intermittent Enophthalmus with Ocular Pulsation.**

KOOYKER, PROF. (No. 13, April 1.), details the history of a 37 year old farmer who suffered from nocturnal epilepsy. In the vertical position he showed right enophthalmus with downward deviation of that eye. On stooping, however, or after forced expiration with closed mouth, or after pressure on the jugular vein, exophthalmus occurs. The right eye pulsated synchronously with

the heart more or less noticeably all the time. Vision equals O. D. handmovements at 4 meters; O. S. 6/36. Right visual field concentrically limited and presented a large central color scotoma. Marked optic nerve atrophy on both sides, but no pulsation of the retinal veins was to be seen. The whole right side of the face was somewhat less developed than the left. After carefully weighing all the facts Kooyker conclude that there must exist a defect in the postero-superior wall of the orbit, hence the pulsations of the eyeball, which to his mind were nothing but transmitted brain pulsations.

#### **Follicular Conjunctivitis Following Cocain.**

KOSTER, DR. (Ibid, No. 15, April 15, 1899.), relates several instances of follicular conjunctivitis following the prolonged use of cocain solutions and warns general practitioners against this too frequent habit. In one case in particular it went so far as to produce paralysis and disease of the conjunctival vessels in addition to a follicular conjunctivitis. This "drug" conjunctivitis falls in the same class as atropine conjunctivitis, with which, however, it is not likely to be confounded. In the latter, the follicles are larger, the mucus membrane more swollen, the secretion more muco-purulent, in short the whole picture reminds more of trachoma. In the case to which Koster refers particularly, the patient's sufferings extended over a period of 7 months.

#### **Retina of Fishes.**

STORT, DR. VAN GENDEREN. (Ibid, No. 16, April 22, 1899.) At the Netherland Congress for Physical and Medical Science at Haarlem, April 7th and 8th, 1899, Dr. van Genderen Stort communicated his researches into "the Anatomy of the Tele-neurons, (rod and cone-neurons) of fishes in connection with the retinal pigment layer and the changes produced therein by light."

Stort's investigations were directed to the Selachi, (which have only a rod apparatus); a series of fishes presenting both rods and cones, which latter, however, are not elastic; and a third series in which elastic cones were found.

His studies lead him to conclude that the rod apparatus



of all fishes is a light and dark apparatus for the recognition of monochromatic uncolored light which affects this apparatus *photochemically*. The cones, on the other hand, have to do with both colored and white light, and are affected only *photomechanically*. He feels that certain important physiologic processes (e. g. Purkinge's phenomenon and the meaning of the colored cones in the bird retina) can be thus explained.

# ABSTRACTS FROM RECENT AUSTRO-HUNGARIAN OPHTHALMIC LITERATURE.

BY

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NEW YORK.

## **Recent Advances in the Treatment of Trachoma.**

FEUER, PROF. DR. N. (*Gyogyaszot*, December 25, 1898.)  
During the last five years various remedies have been recommended for the treatment of trachoma, some of which are indeed of some value, but none of which can supersede the old remedies, viz: silver nitrate solution and bichloride solution recommended by him years ago. His treatment of trachoma is as follows: If the chronic trachoma is associated with intense redness of the conjunctiva, succulence, and copious lachrymation he touches the lids with a 2 per cent. silver nitrate solution every second day, in the intervals the eye is washed with a 4 per cent. boracic acid solution. If the above mentioned symptoms of inflammation subside, or if, notwithstanding several weeks' treatment with silver nitrate, the inflammatory symptoms are unchanged, he rubs the whole conjunctiva with cotton pledgets immersed in a 0.001 solution of bichloride of mercury. Rubbing the conjunctiva with this solution has the advantage over the use of silver nitrate in that it does not prevent the patient from immediately continuing at his work. Bichloride solution is especially superior to copper sulphate in that it is free from the great pain and the burning in the eye, which the latter causes, and which prevents the patient from continuing at his work for the rest of the day. The squeezing out of the soft jelly-like granules is the most valuable therapeutic measure. Dr. Feuer has practiced this procedure for many years with very good effects. The operation is painful, even when performed under cocain. He always squeezes with the nails of his thumbs, never with the Knapp trachoma forceps. After the reaction from the

first operation he repeats the operation. If the conjunctiva and cartilage are thickened, though granules are not present, he performs the same operation, for he believes that the reaction which follows the operation facilitates the absorption of the infiltration. The granules in the tarsal conjunctiva, especially in the sulcus subtarsalis, can be scraped out with a sharp spoon or brushed with a metallic brush. Brushing the whole conjunctiva with the metallic brush is positively to be avoided, as it is followed by total destruction of the tissues. Cauterization of single granules is not to be recommended, as it produces long standing ulcers, and does not remove the infiltration. The operation of squeezing and rubbing with the bichloride solution may be done in progressive pannus. Rubbing with bichloride should be avoided in infiltration and ulcers of the cornea. In those rare cases, in which the eye does not endure the bichloride, we may use a 4 per cent. boracic acid solution, or a solution of iodine-trichloride (1:1000), or we may go back to the silver nitrate solution, or to the use of mitigated silver nitrate, which is never ill borne. The use of boracic acid powder has also been recommended for trachoma. In pannus, especially in the herpetic form, boric acid powder is to be recommended; in old pannus very good results are obtained by thickly strewing the affected area with the powder. In infiltration of the conjunctiva boracic acid powder is not so useful. Argentamin may be used as a substitute for silver nitrate, and iodine-trichloride for bichloride. Dr. Feuer does not find protargol to be of any value in trachoma.

**Bullet Wound of Both Orbits: Location of Bullet by Roentgen Rays.**

GOLDZIEHER, PROF. W. (*Ung. Med. Presse*, Jan. 31, 1899), reports the case of a man, 31 years old, who received a bullet wound 4 years ago. The bullet went through the right orbit, cut the optic nerve and became lodged in the left orbit; the right eye became entirely blind, but the left eye retained sufficient visual power to enable him to continue at his work, as a city clerk. Recently he felt severe pain in the right eye. Examination with the Roentgen rays showed that the bullet was lodged on the

floor of the left orbit. The pains were quieted by the use of quinine.

#### **A Symptom of Hereditary Syphilis in the Eye.**

GOLDZIEHER, PROF. W. (*Ung. Med. Presse*, Jan. 31, 1899), called attention to the following symptom of hereditary syphilis in the eye. In the deepest layers of the transparent cornea there exists a rich net work of blood vessels. This peculiar pathological picture can be seen only if the cornea be examined with the ophthalmoscope and a + lens after the pupil has been maximally dilated. This symptom is found only in those cases in which there has been a parenchymatous keratitis, and is positively to be regarded as one of the most important specific stigmata. The change in the cornea persists throughout the entire life of the individual even though the original syphilis has been cured.

#### **Primary Syphilitic Ulcer of the Eyelid.**

MOHR, PROF. M. (*Ung. Med. Presse*, Feb. 9, 1899.) Primary specific ulcer on the eye appears only as an extragenital affection, and, as the publications of Leissl, Fortuniades, Wildbrand and others, show, it is not so rare as generally believed. In Russia, according to Tepljaschin primary syphilitic sclerosis of the eyelid is especially frequent, on account of the practice common among the people of removing foreign bodies from the eye, and treating various affections of the eye, by licking it with the tongue. In this way syphilitic infection and spread of the disease is made very easy. Even among the people of Hungary it is not unusual for mothers to wash the face and eyes of their children with their urine, and in this way frequently infecting them with gonorrhoea and syphilis. Dr. Mohr has seen several cases of blennorrhoea produced in this way. The most frequent causes for the development of chancre of the eyelids are the practice of kissing and the common use of towels. Physicians frequently develop a chancre of the eyelid due to the lodgement on the eyelid of the buccal secretions from a syphilitic patient during the act of coughing. Chancre of the eyelid must be distinguished from gumma, chancroid, vaccination and tubercular ulcer. The diagnosis between gumma and

chancre is made partly from the history and partly from the absence of other manifestations of syphilis in other parts of the body. If the history of the case is obscure and there are no evidences of syphilis in any other parts of the body, we must wait for the development of other symptoms, which in the case of primary sclerosis will soon make their appearance, but not so in the case of gumma. It is of importance to bear in mind that in connection with gummatous ulcer of the eyelid there is also tarsitis syphilitica, which is a tertiary manifestation. A tubercular ulcer cannot be mistaken for a gummatous ulcer, as other evidences of tuberculosis are also present. Dr. Mohr's case of chancre of the eyelid was very interesting, for it looked so much like a styne that at the beginning a diagnosis of hordeolum was made. The questions whether the affection was not originally a hordeolum which became infected with syphilis. The appearance of secondary symptoms showed that the case was one of syphilis.

#### **A Case of Periodic Exophthalmos.**

LEITNER, DR. W., (*Ung. Med. Presse*, Feb. 25, 1899), reports the following case of periodic exophthalmos: A woman, 44 years old, complains that when she bends forward or exerts herself she experiences a sensation of protrusion of the right eye, and the upper lid and contiguous tissues became swollen; acuity of vision is not changed during the attack. On assuming the vertical position again the eye returns to its normal position. Since the onset of these symptoms, she also noticed a diminution in the acuity of hearing in the right ear and tinnitus aurium, which was increased when she leaned forward. V. of both eyes with  $-5 D. = 0.5$ ; color perception was normal. Field of V. was normal. There was no impairment in the mobility of the right eye. The interior of the eye revealed no pathological changes. On the right upper eyelid there is a bluish network of vessels over an area the size of a penny. When the patient leans forward for a minute the eyeball protrudes 15 mm. in front of the plane of the left eye and the mobility of the eye is diminished in every direction, and on the right upper lid there appears an extensive swelling of a venous network. After she has resumed the vertical position for about two

minutes this swelling of the eyelid disappears, but the eyeball does not return to its normal position till a little later. The protruded eye can easily be pushed back into its normal position; no objective noises can be heard either in or about the eye. Dr. Leitner regards this temporary protrusion of the eyeball as most probably due to the varicose tumor existing near the eyeball. The aural affection associated with the protrusion of the eyeball is worthy of especial attention, as it has not been mentioned in any of the reports of similar cases. Dr. Leitner does not regard it as probable that the affection of the eye and ear is due to the same cause, but is inclined to believe that some circulatory disturbance has a great deal to do with the increase of tinnitus when the patient bends forward. Experience shows that such an exophthalmos can exist for a long time without any injurious effects on the patient's life. The only things to be feared from it are rupture of the varices and neuralgic pains. Active interference is called for only when either of these complications is apprehended.

#### **Tubercular Iritis.**

MOHR, PROF. M. (*Gyogyaszat*, Feb. 26, 1899, at a meeting of the Buda Pesth Royal Medical Association), reports a case of tubercular iritis in a boy of 3 years of age, the color of the affected iris, when compared with the dark brown of the normal iris, is a rusty brown. In the iris, especially in the lower part, there were numerous pin point to millet seed sized elevations which formed small, round or irregularly shaped, grayish-yellow, sharply limited heaps. The striations of the iris were obscured; the pupil was moderately dilated and showed a grayish exudate, which bound the iris to the anterior surface of the lens. The tension is somewhat raised. T. + 1. Treatment consisted in enucleation.

#### **Idiotia Amaurotica Familiaris.**

MOHR, PROF. M. (*Gyogyaszat*, March 19, 1899), briefly reviewed the literature of the subject. Cases of this disease were first described by Warren Tay in 1881; other observers have reported cases since 1881. But our knowledge of this disease was not systematized until Dr. B. Sachs of New York, collected all the reported cases and

symptoms, and investigated in the post mortem room the anatomical changes associated with the disease, and thus gave us a complete picture of the disease under consideration. Prof. Mohr said that his case is the 35th on record, and the 4th in which a post mortem examination of the eyes was made. The brain was examined by Prof. Schaffer and the eyes by Prof. Mohr. He gives the following summary:

1. Amaurotic family idiocy is a well defined disease.
2. Its chief characteristics are that the children are born normally, develop well bodily and mentally until they are a year old; after this they become stupid; the extremities become weak, sometimes rigid, and at other times flexed; the reflexes are either normal, or diminished or exaggerated; the acuity of vision is diminished.
3. In each eye, in the region of the macula lutea, there is a typical white patch in the midst of which there is a cherry red area which is diagnostic. Atrophy of the optic nerve follows, and usually the children die in their second year.
4. This disease usually occurs in several members of the family.
5. In the brain, especially in the cerebrum, cerebellum and pyramidal tracts, there are numerous small spaces; the brain cells are wanting in some places, in others they are the seat of fatty degeneration and atrophy.
6. The macula lutea is edematous and there is atrophy of the optic nerve.

#### **Idiotia Amaurotica Familiaris of Sachs.**

CROSS-GUYLA, PROF. (*Gyogyaszat*, March 26, 1899.), reports the following case of amaurotic family idiocy. The child is of the female sex, sixteen months of age; and until six months ago was perfectly healthy and well developed. Six months ago the parents noted that the child paid no attention to its surroundings and in its sleep would start suddenly. At present the child is poorly nourished and poorly developed for its age; weighs 6,900 gms.; the osseous system shows characteristic lesions of rhachitis; the expression of the face is idiotic, the bridge of the nose flattened, the upper lip slightly thickened, the mouth open, the tongue protruding and enlarged; teeth

are absent. Both pupils are normal and react to light, the media are clear; the right optic disc is whitish, the left is normal. Near each macula lutea there is a round grayish blue area, about the size of two discs, the borders of which are not sharp, but merge into the surrounding healthy tissue. On the border of the patch a number of fine blood vessels are to be seen; in the middle of this patch there is a cherry red arc about one-fifth the size of the optic nerve. The child observes light and perceives objects held in front of the eyes but makes no effort to grasp them. The upper extremities are flexed at the elbow during most of the time, but they are moved by the child freely: when the forearm is extended the tendons become tense, rigid, and strongly resisting. The lower extremities are extended and adducted, i. e., in a spastic condition. The child is not able to sit or to stand. The superficial and deep reflexes are exaggerated. There is incontinence of urine and fæces. Sensibility to the faradic current is a little diminished. Before the examination of the eyes with the ophthalmoscope Dr. Gross made a diagnosis of cerebral diplegia, but the examination of the eyes showed the case to be one of amaurotic family idiocy.



## OPHTHALMIC NEWS, ITEMS AND ANNOUNCEMENTS.

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(Under this heading the ANNALS will publish items of interest to its readers. Please address Dr. B. E. Fryer, 520 East Ninth Street, Kansas City, Mo.)

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Dr. Tscherning has recently been made a Chevalier de la Legion d'Honneur.

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Dr. Ulry, chief of the ophthalmic clinic in the University of Bordeaux, is dead.

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Dr. Julius Samelsohn, of Cologne, died on the seventh of March, 1899. He was 58 years old.

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Dr. C. S. Gray, well known among ophthalmic surgeons, died at Little Rock, Ark., Feb. 14, 1899.

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Dr. Oeller, of Munich, and Dr. Baas, of Freiburg, have been appointed extraordinary professors.

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Dr. Herman Snellen, Jr., has received the appointment of Professor of Ophthalmology in Utrecht, Holland.

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Dr. George C. Harlan has been elected President and Dr. Charles A. Oliver Secretary of the Surgical Staff of Wills' Eye Hospital.

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Doctor Daniel M. Velez has received the appointment of assistant professor of ophthalmology in the Faculty of Medicine of Mexico.

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The annual meeting of the American Ophthalmological Society will be held at the Pequot House, New London, July 19th and 20th.

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On May 2, at the University of Leipsic, busts of Wunderlich and Wagner were unveiled. The day was the centennial anniversary of the medical clinic.

A monument in memory of Professor Ludwig Mauthner, formerly ophthalmic professor at the University of Vienna, was unveiled in the university Court, March 19th.

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Dr. James B. Gibson died April 9th at Colorado Springs. He served as an interne at the Manhattan Eye and Ear Hospital, but afterward practiced ophthalmology at Colorado Springs.

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Dr. Jabez Hogg, the well known ophthalmic surgeon of London, died April 23, 1899, at his residence in London. He was 82 years of age, and was made a Member of the Royal College of Surgeons in 1850.

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Dr. Robert L. Randolph, of Baltimore, our esteemed editor for German literature, has been awarded the Alvarenga prize by the College of Physicians in Philadelphia for his essay, "The Regeneration of the Crystalline Lens, an Experimental Study."

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A new ophthalmic journal in Spanish has been started in Mexico. It will appear in monthly numbers, and is under the editorship of Drs. M. U. Troncosco and D. M. Velez, of Mexico, and J. Santos Fernandez, of Havana, and C. A. Oliver, of Philadelphia. The name of the new journal is *Annales de Oftalmologia*.

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A well deserved honor was conferred by the American Medical Association upon Dr. H. V. Würdemann, Editor in chief of the *ANNALS OF OPHTHALMOLOGY*, he having been elected Chairman of the Section of Ophthalmology. Dr. C. F. Clark, of Columbus, Ohio, was elected Secretary of the Section.

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A new bacillus for syphilis—Niesser (Wiesbaden) has cultivated a bacillus from the blood of syphilitics, the inoculation of which into monkeys and pigs calls forth symptoms somewhat similar to those seen in the human being, a peculiar rash of the skin and mucous membranes, swelling of the lymph-glands and finally fatal disease of the nervous system.—(Phila. Med. Journal, May 6, 1899.)

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Treatment of Eye Diseases in Russia.—A "curatorium" for eye troubles exists in St. Petersburg which sends commissions through the country districts for the purpose of giving free treatment and advice to those among the peasantry who are suffering from affections of the eyes. The report for the year 1898 states that thirty-three of these ophthalmological expeditions were sent out during the year to various parts of the empire. On these commissions were 107 oculists and 17 students, who treated 53,828 cases of eye diseases and performed 16,029 operations.—(Phila. Med. Journal.)

**Royal London Ophthalmic Hospital.**—The new buildings of this institution, widely known as Moorfields Eye Hospital, which have been erected in the City Road about a mile from the old site, will be opened by the Duke and Duchess of York. Provision is being made for 40 additional beds and for a much larger out-patient department.

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Our European exchanges mention the silver wedding celebrations of the Dr. Duke Charles Theodore of Bavaria and his wife, the Princess Marie of Braganza. This titled confrère is a specialist in ophthalmology at Munich, and maintains a free clinic for the poor, dispensing charity among his needy patients with a lavish hand.—(Journal Am. Med. Association, May 20, 1899.)

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Dr. B. E. Fryer has resigned the chair of Clinical Ophthalmology in the University Medical College of Kansas City, and has been elected Clinical Professor of Ophthalmology in the Medico-Chirurgical College and also Professor of Ophthalmology in the Woman's Medical College of Kansas City. And Dr. J. S. Lichtenberg, of Kansas City, has been appointed Adjunct to these Professorships.

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**More Christian Scientists in Trouble.**—A man and his wife were recently arrested in Buffalo on warrants charging them with manslaughter in causing the death of a boy, nine years old. He, with his parents, had been visiting an officer of the Thirteenth infantry at Fort Porter. Warrants on the same charge were also issued for the parents of the child. The arrest was made under the United States laws, as the death occurred on federal ground. The boy is said to have died of pneumonia and without medical care.—(New York Med. Record, June 3, 1899.)

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**A Slight to English Oculists.**—The *London Truth* says that Dr. Pagenstecher, of Wiesbaden, who has been consulted by Queen Victoria concerning her eyes, recommends a speedy operation for the removal of the cataract with which her majesty is afflicted, and even goes so far as to guarantee that the operation will be successful, and that after it the Queen will entirely regain her sight. As once before, the curious are asking what is the matter with London ophthalmologists that her majesty should look to a German for advice and treatment.—(New York Med. Record, June 3, 1899.)

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At the meeting of the Berlin Ophthalmological Society, March 23, 1899, Hirschberg exhibited a case of occlusion of the pupil which he had operated on at two seances with satisfactory result. Lehman showed a child with congenital opacity of the cornea. Rau presented two cases of Keratocele Marginalis following operative measures. Rau operated on these cases successfully by transplanting conjunctiva. Obarrio presented a case of apron-shaped Ectropion Uvea Congenitalis. Turck read a paper on "Investigations upon the Origin of the Physiological Venous Pulse of the Retina."

**Heredity of Ptosis Palpebrarum.**—M. Münden, of Hamburg, relates (*Deutsche Med. Woch.*, March 9) that in 1820 a woman was crossing the river in a boat when it upset, and in her struggle the eyelids were convulsively closed; rescued and revived, the lids were permanently affected with ptosis. Pregnant at the time, when she gave birth to the child it was also affected with permanent ptosis palpebrarum. This child grew up and bore three children, two normal and one with the same congenital ptosis. The latter is still living and one of his children is also affected in the same way.—(*Journal of the Am. Med. Association.*)

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Mauthner, in his admirable monograph on Sympathetic Ophthalmia, stated that he once saw an operator about to begin the enucleation of a sound eye; the speculum was in place when Mauthner stepped forward, and the field of operation was correctly changed. But if the newspaper report is not erroneous, a sound eye was removed recently in Montreal. Possibly this is not the first instance of the kind. As a matter of safety in every enucleation, it is the duty of operators, after having the lid holder in position, to raise the lids of the fellow eye, and briefly examine it before proceeding any farther in the operation.

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**Sudden Death from Nitrous Oxide.**—Death is reported to have occurred in Leipzig recently in the case of a young American woman who had a tooth extracted while under this gas, and while only unconscious three-fourths of a minute, she fell back dead, just after being roused from the anesthesia. Heart failure is the given cause of the fatal result. Nitrous Oxide is in such general use by dentists, and while it is probably the safest of all general anesthetics, it must be admitted that it cannot be free from danger. From the fact of no nausea or vomiting following its administration, it has a place in ophthalmic surgery for short operations when a general anesthetic is demanded, and while statistics prove it the safest of all anesthetics, it is not absolutely free from danger.

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**The Cause of Blindness in Children.**—Dr. Förster, director of the Ophthalmological Clinic at Breslau, has recently published some instructive statistics regarding the causes, other than ophthalmia neonatorum, of blindness in children. According to these, injury to the eyesight, with consequent blindness, is mostly occasioned by carelessness, more than twenty per cent. of these cases being caused by playing with sharp instruments, and twelve per cent. by malicious injury, such as blows, stone-throwing, whipping, and unsuitable means of correction. Similar results are shown by the statistics of most other ophthalmological clinics. Boissoneau, of Paris, reports that of nine hundred and thirty-nine children who were blind in one or both eyes, more than three hundred and fifty were injured by shooting and by the explosion of percussion caps.—(*New York Med. Record*, May 20, 1899.)

**A New Alkaloid from Coca.**—Guenther, of Berlin, and Schaefer, of New York, have reported on a new base, which has been recently isolated from the mother liquid of coca. The discovery was made in the attempt to find a reliable test for the purity of the alkaloid cocain. MacLagen's test heretofore has been considered the most reliable, but Guenther has shown that this does not positively detect the presence of other substances, notably isatropyl-cocain, which is supposed to be a powerful cardiac poison and the cause of some of the cardiac depression seen in the use of cocain. Some of the properties of this new base are as follows: It melts between 110° and 111° C., whereas cocain has a melting-point between 97° and 98° C. Salkowski, who has investigated its pharmacological action, reports that its action is very similar to cocain. The solubility of the new base is about 1 to 2,500, while that of cocain is 1 to 700 in water. It is optically active, being lævo-rotary like cocain; is less soluble in all media; hence some of these—notably, petroleum ether—may be used for the isolation of this body. Chemically the body is a methyl-cocain, and is hence a homologue of cocain itself. Its chemical formula would thus be reckoned as  $C_{18}H_{23}NO_4$ . Schaefer is of the opinion that this new base, which he proposes to call cocainidine, is weaker than ordinary cocain, especially in its anaesthetic properties.—*Berichte der deut. pharmaceutischen Gesellschaft*, 9, 1899, p. 38, February 2d; *American Druggist*, April 10, 1899.

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**The Treatment of Eye-Strain a Professional Matter.**—At the latest meeting of the American Medical Association the President appointed a committee of three to correct and formulate resolutions in reference to the practice of ophthalmology. This committee proposed the following, which were unanimously passed:

*Resolved*, by the American Medical Association that the treatment of errors of refraction in the eyes requires a knowledge of pathology and therapeutics:

*Resolved*, that the application of lenses in such cases as a part of the practice of medicine, to be undertaken by no one not qualified to practice medicine and surgery.

The association thus places itself squarely on record in reference to what is becoming a national and professional disgrace. With this clearly enunciated professional principle set forth, prosecution of prescribing opticians should be instituted in all parts of the country whenever shall occur instances (which are happening every day) of malpractice by those who are not legally physicians. Eye-strain is itself a disease and leads to many other and serious diseases. The treatment of disease is limited by law to those holding the degree of M. D. Those not possessed of the degree who treat disease should be prosecuted. It is time that this principle were legally enforced. Copies of these resolutions should be sent to every State examining board and medical society, and these should govern themselves accordingly.—*The Philadelphia Medical Journal*.

At the last meeting of the American Medical Association the following resolution was adopted:

*“Resolved, That no paper shall be placed on record for the consideration of any Section unless an abstract, of not less than 50 or more than 300 words, accompanies the title, and placed in the hands of the Chairman or Secretary of the Section at least 30 days before the time of the meeting of the Section.”*

Another important resolution was passed, prohibiting the printing of the name of any author on the program unless the title of the paper was also given.

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Mr. Russell, whose articles on the ability of various substances to photograph themselves in the dark excited much attention in scientific circles some months ago, has continued his experiments. He has secured much confirmation of the power of sundry metals, woods (especially if charred) and oils to impress an image of their form upon a photographic plate if left in contact with it or at a little distance from it in a dark room. Experiments at various temperatures have shown that the higher the temperature the more rapid is the action upon the plate. For instance, while at an ordinary temperature it takes two weeks for the words on a bit of newspaper to print themselves legibly, if the temperature is raised to 131 degrees Fahrenheit the image is clear in five hours. Vegetable oils are especially active in photographing themselves. Animal oils possess the property in less degree, while mineral oils lack it altogether. Zinc not only readily impresses its own image as a dark shadow, but quickens similar action in substances placed upon it. Dr. Russell is not making a definite pronouncement as to his conclusions, but he suggests that the ability of the substances he has tested to photograph themselves is due to the presence of peroxide of hydrogen.

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In re “Ophthalmotrician.”—The following resolutions presented by Dr. Louis F. Lautenbach, of Philadelphia, Pa., and supported and seconded by Dr. S. S. Towler, of Marionville, Pa., were unanimously adopted by the Medical Society of the State of Pennsylvania, on May 17, 1899, and also at Johnstown, Pa.

*Resolved, That it is the opinion of the Medical Society of the State of Pennsylvania that opticians are not qualified by their training nor are they legally qualified, to perform the work of the oculist, and they should not be the consultants of regular physicians. Further it is*

*Resolved, That all physicians are requested to call their brother physicians in consultation, thus discountenancing the growing pretences and assurances of the optician and his brother, the graduate optician, or, as he is beginning now to call himself, the “Ophthalmotrician.”*

Dr. Lautenbach presented similar resolutions substituting “American Medical Association” for “Medical Society of the State of Pennsylvania” for adoption by the American Medical Association at Columbus, on Tuesday morning, June 6. It is hoped that the resolutions will receive the unanimous approval of the profession.

**Coeducation in the German Universities.**—According to the *British Medical Journal*, clinical students of Halle University have publicly protested against the admission of women to the medical curriculum. In a paper fixed on to the University blackboard they hotly oppose, not the study of medicine by women, but the attendance of women at clinical courses in common with male students. They appeal to the clinical students of Germany, who, they say, either know by experience or can fully imagine the awkward situations, outraging all sense of decency, which necessarily ensue from such study in common. "With the female students," they say, "cynicism has entered our university"—and they imperatively demand the exclusion of female students from the men's clinical courses, appealing to the medical students of all German universities to join in the protest. The Berlin medical students have not followed the lead of their Halle brethren. They have refused to let the protest be fastened on their University blackboard. In Halle itself an authoritative counter-declaration has appeared, signed by the dean of the Medical Faculty, Professor Weber. The complaints of the students have been carefully considered by the medical professors, and have been found to rest partly on misunderstandings, partly, however, on direct misrepresentation. Through their Dean the medical professors solemnly declare that neither morality nor the scientific gravity of clinical instruction has suffered in any way since the admission of female students, nor have the tone and general deportment in the clinics and lecture-theatres changed for the worse in any way. They declare the students' accusations to be totally unfounded, and deplore the animosity shown by them against the female students, which these latter have done absolutely nothing to deserve; and they would not hesitate to proceed against the authors of the protest if they were not convinced that they had not realized the full meaning of the step they had taken. Finally, the professors hope that peace will soon be restored and the good feeling between professors and students henceforth remain undisturbed.—*Phila. Med. Journal*, April 29, 1899.

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**Action for Injuries Caused by the X-rays.**—An action has recently been brought in a Paris law-court for damages caused by the X-rays. Mme. Mockert suffered from an affection of the hip-joint. Her medical attendant recommended an operation; the patient disliked the idea. In order to ascertain that it was necessary, an examination with the x-rays was made by a specialist. The first sitting lasted 40 minutes, the second 45, the third an hour and a quarter. The result was negative. After the second sitting the skin of the region radiographed was red and mottled. A few days subsequently there was a sore place which was followed by a scab. The suffering was so intense that it was feared that the patient would go out of her mind. Gangrene seemed to be threatening. Mme. Mockert was taken to the seaside. Five medical men attended her at a cost of £136 15s. Mme. Mockert and her husband sued the radiographer for £200 damages. Counsel for the defence read a



letter from Dr. Bardet, head of the Laboratory of the Pitié Hospital, wherein he states that if any responsibility is attached to the use of Röntgen rays they cannot be utilized. The susceptibility of patients to the influence of the x-rays varies like their susceptibility to that of drugs. The Court has decreed that a medical commission be appointed to decide as to the duration of the examination considered safe. Judgment is postponed.—[*British Medical Journal.*]

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ALFRED GRAEFE, born November 23, 1830, at Martinskirchen, on the Elbe. Died April 12, 1899, at Weimar.

If the new era of ophthalmology is coupled with one name it is with that of Albrecht von Graefe; if we would seek for his greatest teacher and co-worker, we would find him in the person of his kinsman Alfred Graefe.

Born on the 23d of November, at Martinskirchen, near Muhlberg, on the Elbe, he laid a firm foundation for his knowledge of ophthalmology at the Universities of Halle, Heidelberg, Würzburg, Leipzig and Prague, and was thereafter awarded his Doctor's Degree at Halle, upon his thesis *De Caniculorum Lacrymalium Natura*. To complete his studies in ophthalmology, he became Assistant to his relative Albrecht von Graefe, in Berlin. But he visited also the new French school of ophthalmology which the German, Sichel, had founded in Paris, and worked there, and also with that prominent teacher, Desmarres. In 1858, he established himself—a pioneer North Germany—at Halle, as Privat-docent for ophthalmology, and founded there also a private clinic for eye diseases, which was a blessing for those suffering from eye troubles; and thence created a demand for clinical instruction. In 1864, A. Graefe was appointed *Ausserordentlich Professor*, and was entrusted with the direction of the establishment of the new University Eye Clinic. In 1877, when in Prussia, thanks to the influence of Jacobson, the University instruction was newly arranged, and Graefe was made *Ordentlicher Professor*, and afterward *Geheim Medicin—Rath*. Thus he worked as a prominent University teacher in Halle and conducted a flourishing school of ophthalmology.

In the year 1892, from increasing ill health, he was forced to give up the direction of the University Eye Clinic, and also his private practice, to return to that beautiful seat of the Muses, Weimar, where he devoted himself to scientific pursuits until his death.

Alfred Graefe was one of the most prominent oculists and most facile operators of his time. To thousands he either saved sight or restored it when gone. He had the confidence of the higher classes of citizens, the love of the poorest and most wretched. His skill was manifested toward all with the same manly friendship, self-willing sacrifice, solicitude and integrity of purpose. With all he was an amiable colleague and of a thoroughly ingenious nature, winning manner and bearing. His scientific achievements were great; they have secured for him a lasting memory in the history of our art.

His first work of magnitude was a "*Klinische Analyse der Motil-*



itättstörungen," (Berlin, 1858) and it opened to the medical world a new sphere of exact ophthalmology. To this important sphere he remained true until death. In the large Handbook of Ophthalmology which he published in 1874, in connection with Th. Saemisch, he himself worked out the anomalies of the eye. In 1897, he opened up a discussion on the vision of squinting eyes. As a new study, necessary after 25 years, in the Handbook above mentioned, he again took up the anomalies of eye movement. Three articles by him have appeared on this subject, the last on December 15, 1898. We hope that the manuscript finishing the work is in existence so that this last work will be for him a most appropriate memorial, more lasting than bronze, if not as touching as the memorial soon to be erected at Halle by his devoted friends.

To him is due the most important facts in the treatment of the wound in cataract extraction, and also the cysticercus operation, with the incision in the posterior portion of the sclera.

Alfred Graefe had, above all, a record of 400 consecutive cataract extractions without a loss!!—J. Hirschberg, Berliner Klinische Wochenschrift, Vol. XXXVI, No. 17, April 24, 1899.

The present attitude of our bastard children, the "opticians," is decidedly unfilial. They are becoming so puffed up with pseudo science that the title "Doctor of Optometry" will soon be held by most of the little vendors of gold plated gewgaws and watch repairers, as well as by the paid clerks of the rich and influential jewelry and optical houses, who now style themselves "refracting opticians," having learned their little knowledge from a few days or perhaps several weeks of "kindergarten" lectures on optics and refraction in some one of the so-called "optical colleges."

The following quotations are reprinted from the principal trade organ of the jewelers and opticians to show the present relations of the oculist and physician to that of the mechanic and salesman.

We cannot let the bars down as they wish. The public should constantly be kept aware of the fact that the prescribing of lenses is a very important branch of the healing art and cannot be harmlessly done unless by the physician:

"Educational Progress in Optics.—The extended report in this issue of the proceedings at the annual meeting of the New York State Optical Society makes interesting reading for all optical practitioners. It will be noticed that the members were much aroused over the aggressive antagonism of the medical profession, as evidenced in resolutions recently passed by a number of medical societies. As the doctors base their opposition on the alleged incompetence of the opticians, their hostile attitude gave added zest to the discussion of the resolution advocating an educational test for opticians. This resolution, which embodied an idea long advocated by The Keystone, was heartily endorsed in our last issue, and we are pleased that we expressed in advance the opinion of the society, for the resolution, or at least that portion of it, commending 'the inauguration of a national movement among the optical

societies to establish a standard of examination in optics and optometry' was passed unanimously.

"The clause referring to the affixing to the name of the qualified optician some letters symbolic of professional status, did not appeal to the sense of the meeting and was expunged from the resolution. This view of such symbols is in accordance with the tendency of the age, which is inclined to discredit rather than be impressed by alphabetical affixes of any kind.

"The Keystone takes pleasure in congratulating the New York State organization, as well as the Iowa Society, on the great success of their annual conventions. The encouraging progress made toward elevating and professionalizing optical practice is evidenced, and ultimate success foreshadowed, in such meetings".—Editorial "The Keystone," July, 1899.

"The annual meeting of the New York State Optical Society was held on June 26th and 27th at the Fifth Avenue Hotel, New York City.

"Some thirty-five members were in attendance at the opening session, which was held on the evening of June 26th. President Cross announced that the session would be given over to the reading of scientific papers. The programme opened with the reading of the annual address of the president. Mr. Cross began by referring to the advancement made by opticians during the past year, despite the opposition in some quarters of the medical profession, or at least a few radical oculists who insisted that medical graduates alone had any right to correct the troubles—refraction defects as well as diseases. He contrasted the narrow-mindedness of the editor of the *Philadelphia Medical Journal* with the broad-mindedness of the editorial comments made in the *London Lancet* the subject matter of which has been referred to in recent issues of *The Keystone*.

"He then proceeded to comment on the attempts made by the Illinois doctors to have the State law enacted to bar out opticians, and referred to the definitions in standard dictionaries as conflicting with the claims of these M. D's. Mr. Cross then complimented S. R. Quigley, the optician of Elmwood, Ill., who exposed the efforts of certain doctors to prejudice the public against opticians through the medium of text-books, which matter was fully reported in June *Keystone*, in the report of the doings of the Illinois Optical Society. Mr. Cross next referred to the resolutions that had been proposed at various medical societies at the instigation of Dr. Lautenbach, of Philadelphia, and which appeared in the columns of this journal last month. These resolutions have already been passed by several medical societies.

"He then explained at some length the work done by his society in examining the bills offered in the New York Legislature, and the care needed in this direction to see that no measures antagonistic to opticians be allowed to slip through unnoticed. Commenting on the formation of the American Association of Opticians he pointed out that it was a trade rather than a scientific organization, and however desirable such a society might prove to be, the greater need for refractive opticians lay in being identified with local scientific societies. In this connection he commended the good work done by the New England and New York State Association and the New York City Society.

"He then referred to the defence fund instituted last fall by the society and the propositions that would be made in the executive session looking to the establishment of a national educational examination by all the societies, and the proposal to adopt some symbolic title to bestow on those who passed such an examination."

"Mr. Cross offered the following resolution, which was quickly adopted:

*Resolved*, That the Optical Society of the State of New York, in executive session at the Fifth Avenue hotel, New York City, on June 27th, 1899, hereby protests, in the name of truth and common decency, to the publishers of the school text book called 'Hutchison's Physiology and Hygiene,' against the further publication of that part of note 2 of said book, which appears on pages 291 and 292 of the edition of 1898, wherein the following words are used: 'We say distinctly, once for all, that the ophthalmic surgeon is the one to be consulted as to the wearing of glasses. He, by testing the eye, can alone decide whether any, and what glasses, should be worn. Opticians and spectacle venders know nothing about the laws which govern the refraction and accommodation of the eye. It is not their business any more than it is the apothecary's to know about disease.—Signed, Dr. B. Joy Jeffries.' It is further

*Resolved*, That the secretary of this society be instructed to forward a copy of these resolutions to Messrs. Maynard, Merrill & Co., publishers, and that copies be also sent to all of the local, State and national optical organizations throughout the United States.

"Mr. Cross then took up the circular issued by Dr. Lautenbach, of Philadelphia, which had been passed by several medical societies, and suggested that some action be taken to counteract the effect of such gratuitous misstatements. This circular was published in June Keystone. Several speakers expressed the belief that the doctors who were prominent in advocating such adverse action against the rights of opticians were not men of high standing in their profession. Several members thought opticians could take advantage of the antagonism existing between regular physicians and specialists, as the former were inclined to work in conjunction with opticians in eye troubles, rather than send the patient to an eye specialist, who would not only look after the refractive troubles but the general ills of the patient, and thus rob the general practitioner of his patient. After considerable discussion, during which the following resolutions offered for passage were criticised as being scarcely forcible enough, they were adopted:

*Resolved*, That the Optical Society of the State of New York, in annual session at the Fifth Avenue Hotel, New York City, June 27, 1899, views with regret the unprofessional and unscientific attitude of those medical societies, in adjoining States, who are led by designing eye specialists to adopt resolutions tending toward the estrangement of opticians and physicians. This society believing that the honorable occupation of an optician entitles him to the same courteous consideration, at the hands of medical men, as that now accorded to those following dental and other mechanico-scientific callings; and it is further

*Resolved*, that the Secretary of this society be instructed to furnish copies of these resolutions to the lay and scientific press, as well as to all of the optical and medical societies throughout this State."

"Pres. Holmes, of the Iowa Society, favored the resolutions to be offered and would add a discussion of the same to the program, of the Iowa Society, to be held June 21st. J. W. Sanborn, of Boston, president of the New England Optical Institute, wrote depreciating the use of any affix to the optician's name, unless it was acquired by taking a degree from some established and recognized school of

learning. He believed that only by a semi-medical education could the optician serve the public fully and to the degree required by it.

"After the reading of these letters President Cross presented his resolution as follows:

*"Resolved*, That it is the sense of this meeting that the time is ripe for the inauguration of a national movement among the optical societies of the country for the establishment of a standard of examinations in optics and opometry, with the granting of certificates of proficiency, together with permission to those qualifying to affix to their names and business correspondence some kind of symbolic letters that will enable the public to be informed as to the educational qualifications of those opticians holding such certificates. And it is further resolved, That a committee of three be appointed by the incoming president to correspond with committees from other optical societies, with a view to the perfecting of details and the carrying into effect the spirit of these resolutions."

"A letter from W. G. Fay, of Springfield, Ohio, was read, in which the author called attention to the claims of the medical profession that a mydriatic was necessary to determine the existence of and measure the latent hypermetropia, a contention that opticians did not recognize, and he urged that some action be taken looking to the settlement of the claims of the two professions. He suggested the appointment of a special committee to examine the matter fully and impartially, and which would offer the best system of determining the existence of and calculation of the latent and manifest hypermetropia.

"Some discussion followed the suggestion, but no action was taken on it, Messrs. Ferguson and Cross contending that latent hypermetropia was something of a bugbear and its existence doubtful and generally much magnified.

"Speaking on the need of the use of mydratic, Mr. Ferguson stated that the medical profession was not a unit in advocating its use, quoting Drs. Bull and Winslow as among many doctors who feel no need for its general use, at least. He said a mydriatic was not needed, except in cases of iritis, and in some forms of cataract. Atropine, in his opinion, put the eye in a morbid condition.

"Mr. Palmer, of Boston, referred to the need of atropine in treating children, and stated that good results were obtained by the use of homatropine, which is now generally used by medical men and some opticians in Boston. He believed, however, that where the objective method was capably used mydriatics were not needful.

"In the discussion that ensued on Mr. Clark's paper, while all agreed that the examination of school children's eyes by opticians was a good thing and one calculated to increase not only the optician's business, but his professional standing, some differences were expressed as to who should conduct the examinations."—"The Keystone," July, 1899.

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Dr. A. G. Aldrich, after a year of special study with the leading ophthalmologists and otologists of England and the Continent, has returned and located in Minneapolis, Minn., limiting his practice to the eye and ear.

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Section on Ophthalmology of the American Medical Association.  
—At the meeting in Columbus, June 8th, 1899, the Executive Committee reported the following resolutions:

It is the decision of the executive committee that the number of papers to be read at the meeting to be held in 1900 be limited to 40, of which 15 are to be on invitation by the chairman, and 25 to be accepted from volunteers. These are to be limited to 15 minutes each.

Three addresses by special invitation may be obtained at the discretion of the officers from within *or without* the Association. These papers may be allowed 20 minutes.

Papers are to be accepted in the order of their reception and at discretion of the executive committee.

Abstracts of all papers must be sent to the secretary before May 1st, 1900.

Discussions are to be limited to five minutes each and no person shall speak more than once in the same debate.

Due notice of this will be printed in the Journal of the Association, which will be considered the official notice for the volunteer papers.

The resolutions were unanimously adopted.

LUCIEN HOWE,  
GEO. E. DESCHWEINITZ,  
HAROLD GIFFORD,  
Executive Committee.

## BOOK NOTICES.

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### DEFECTIVE EYESIGHT. THE PRINCIPLES OF ITS RELIEF BY GLASSES.

ROOSA, D. B. ST. JOHN, New York. (The Macmillan Co., 1899.)

The author states in the preface that the work is a revision of a former volume. "The determination of the necessity for wearing glasses"—that in the preparation of the present book he has had to re-write it.

The treatise is one of 186 pp. and is divided into seven chapters—the first is devoted to the measurement of visual acuity, describing the early attempts as to exactness of a visual standard and visual tests by test letters. It is to be regretted that the author sees no advantage in the metric system, when it is remembered that lenses are so much more advantageously numbered by that system.

In giving the classification of cases requiring glasses, the author omits the title of astigmatism, but states that it may be resolved into one of the following conditions: "I. Hypermetropic astigmatism, where the eye is too short in one meridian only. II. Compound hypermetropic astigmatism, where the eye is short in both meridians and shorter in one than the other." (Where is myopic As. ?) These descriptions must refer either to the radius of corneal curvature or to the antero-posterior eye diameter—if to the first they are correct—if to the latter they cannot be completely so.

With reference to the Ophthalmometer of Javal, the author makes a statement which few oculists will agree with, viz: that it is a thoroughly accurate instrument. The author's assertion is applicable to corneal curvatures, the lenticular radius of curve being so far as the ophthalmometer is concerned an unknown quantity of the utmost importance. Yet the author states, page 96, "I reiterate my advice to every practitioner to learn the use of the ophthalmometer, and make his diagnosis with that instrument if this is at all possible. If he will do so he will scarcely ever find it necessary to paralyze the accommodation for the purpose of prescribing glasses."

At a recent meeting of the "New York State Optical Society" Drs. Bull and Winslow were quoted by an optician as stating "that a mydriatic is not needed in determining the existence of and calculation of latent and manifest hyperopia." He said "a mydriatic was not needed, except in cases of iritis, and in some forms of cataract. Atropin, in his opinion, put the eye in a morbid condition." The teachings of Dr. Roosa and other members of the N. Y. Post-Graduate Medical School are responsible for this fallacy. However much we regard the learning and contributions to ophthalmic science made in previous years by Dr. Roosa, we cannot but condemn the present book for its heresies of belief and misstatements of fact.



I quote the following from an editorial in the June Ophthalmic Record, which is none too severe a criticism upon Dr. Roosa's elsewhere published opinions upon cycloplegia that are again expressed in this book. "A certain number of gentlemen who are connected with the New York Post-Graduate School have taken occasion at different times to set forth in the New York *Post-Graduate Journal*\* their views upon the uselessness of having the accommodative effort suspended for a proper determination of an error of refraction. What possible object these gentlemen have in maintaining this position we are at a loss to understand. If they alone were to practice ophthalmology without using cycloplegics in their refraction work it might not be far-reaching, but when students beginning their ophthalmological career are taught that an error of refraction can be determined as accurately without cycloplegia as with it, then it does become far-reaching, and probably accounts for some of the woefully poor work performed by some of them. If this were all, still it would not be so bad, *but the army of opticians not permitted to use cycloplegics, who are ever ready to find some excuse for not doing so, cite these eminent authorities, and claim equal ability with the ophthalmologist in the determination of errors of refraction.*

"If this doctrine emanated from a less prominent institution of learning it would not command our attention, but coming as it does from so prominent an educator, we are compelled to say in plain terms what we think about it. We have known for some time past that Dr. Roosa did not believe cycloplegia at all necessary except "in very rare and exceptional cases."† We hoped he would not be able to influence his subordinates to adopt his way of thinking. We infer from the utterances of some of these gentlemen that cycloplegia in the refraction room is infrequently resorted to in New York. If this is so, we extend our sympathies to their patients. We do not propose to analyze their reasons for dispensing with cycloplegia in refraction work. This, from our standpoint, would be impossible. We are at a complete loss to understand it. If New York is right, then the rest of the world must be wrong. What a frightful state of ignorance! Fortunately Dr. Roosa and his staff at the Post-Graduate do not represent all of New York, and it is to be hoped that all of the New York ophthalmologists are not so misguided.

"We shall not attempt to defend the position that cycloplegia holds. It needs no defense. If accurate work is to be performed, the position of cycloplegia is established as a positive necessity in the refraction room."

It is remarkable that the author should dismiss muscular imbalance from any part of the cause in so-called asthenopia, and, while it is admitted that the normal dynamic ocular muscular conditions should probably be re-studied, careful ophthalmic surgeons of experience have repeatedly found correction of muscular anomalies

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\* *The Post-Graduate*, Vol. XII, No. 12. Vol. XIV, No. 11.

† *Medical Record*, New York, March 26, 1892.

remove most distressing eye and head symptoms, including what is generally called asthenopia. As a rule the correction of a refractive error only, where there is also a well marked muscular anomaly, will not bring complete relief. No reference is made by the author to the oblique ocular muscles; nor is there any consideration given to skiascopy:—a modern work on refraction should certainly give space to this valuable test, although its author may do without it.

Chapter II considers presbyopia, and on page 45 is found the following: "Very great deviations from the normal, occur without any particular harm to the capacity to use the eyes or to the general health." Myopia is treated of in the third chapter and hypermetropia in the fourth. Very clear and satisfactory directions are given in chapter V for the use of the ophthalmometer. Chapter VII is devoted to general remarks and in it will be found very accurate and sensible directions.

It is to be regretted that an author so distinguished should put forth a work with so few claims to excellence. The matter of anomalies of refraction and also the muscular imbalances, and that of giving the proper advice in regard to their correction, cannot be minimized or slighted;—every ophthalmologist of experience knows that the whole subject is intricate, and that each and every case of ametropia should be studied carefully, and that *all* of our instrumental aids should be put in requisition in solving the problem of relief. The wording of the treatise is clear and the volume is well printed.

H. V. W.

### THE NEWER REMEDIES.

Including their synonyms, sources, methods of preparation, test, solubilities, incompatibilities, medicinal properties, and doses as far as known, together with sections on organo-therapeutic agents and indifferent compounds of iron. A Reference Manual for Physicians, Pharmacists and Students.

VIRGIL, COBLENTZ. (Third edition revised and enlarged. Philadelphia, Pa., Blakiston's Son & Co., 1899. Large 8 vo, 145 pp., p. \$1.00.)

Virgil's manual to the Newer Remedies is more than a supplement to the Dispensatory, much more even than an alphabetical list of the products of later laboratory science and art. It is an index, alphabetically arranged, to all the newer drugs with which we in late years have been overwhelmed, including and this is by no means the least valuable part of it—description, analysis and synonyms of semipatent, semisecret combinations masquerading under quasi-therapeutic titles. It begins with Abiaba and ends with Zymoidin, and so far as I can see, nothing is omitted. The drug or name is given in large type for easy finding; its chemical formula follows, then its composition or synonym in small type. Below is a description of its manufacture, its appearance, and its therapeutic uses, actually developed or claimed by its producers.



The book has great value for ready reference, as no one today is able to remember all the newer drugs, or their combinations, or uses. For instance I was very pleased to find a good description and explanation of euphthalmin, of holocain, of tropa-cocain, of protargol, airol, extract of suprarenal capsule, of scopolamin. It clears one's knowledge to read of drugs outside of manufacturer's circulars. The index is probably not perfect, in fact, I was disappointed to find traumaticin dismissed with a line conveying no information whatever; I find that argentamin is said to contain phosphate of silver, whereas the manufacturer has gone back to the nitrate; mandelic acid, although mentioned many times, has no description of itself. I dare say I could find other faults, but they are so rare and the delight of discovering the significance and derivation of many, many new and little understood drugs, is so abundant and persistent, that I cannot criticize unfavorably. The book is more than useful, it is invaluable, and lies on my desk along with dictionaries, grammars and other impedimenta of the student. I know that he who buys it will never regret it, and he who refers to it once will do so a hundred times.

A. B. H.

#### PROGRESSIVE MEDICINE.

(A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences, edited by Hobart Amory Hare, M. D., published by Lea Bros. & Co., Philadelphia.)

Vol. I, the March number, is the first of a series of volumes on Progressive Medicine. These books will occupy the place formerly taken by Sajous' Annals. They appear in quarterly form of about 475 pp. each. The price is much less than that of Sajous', being by subscription, 4 Vol., \$10.00 a year. The object of the contributors seems to be to confine themselves to the actual advances and discoveries made in the medical and surgical world in the preceding 12 months. The subjects are presented in a condensed and scientific manner, forming a volume which will be of special value to the busy practitioner.

The contributors to Vol. I comprise the following well known men: Blockader, Da Costa, Hektaen, Randolph, Thayer and Turner. The volume includes the following subjects: Surgery of the Head, Neck and Chest; Diseases of Children; Pathology; Infectious Diseases; Laryngology and Rhinology; Otology. The subjects of Laryngology and Rhinology are discussed by A. Logan Turner of Edinburgh. An abstract from this is the following: "It is sometimes extremely desirable to have a chance to make a detailed laryngoscopic examination of young children. One is apt to hesitate, however, to employ general anesthesia, and parents will object to an anesthetic, unless some operative procedure is intended at the same time. Besides, laryngoscopic examination under an anesthetic is usually unsatisfactory. For a physician who does special work on the throat some method of accomplishing this purpose of satisfactory laryngoscopic examination of children is absolutely necessary. Dr. A. D. Blockader, of Montreal, de-

scribes two novel methods. The first is Escat's suggestion, and is instrumental. He has devised a peculiar form of tongue depressor, as shown by the accompanying figure. As may be seen in the illustration, the instrument is curved so as to adapt itself exactly to the base of the tongue. On the distal extremity a blunt fork is fixed, of which the two branches descend, one on either side of the epiglottis, ending in two rounded points which, when the instrument is used, are supposed to lodge in the pyriform sinuses on each side of the laryngeal orifice. The instrument serves, therefore, not only to control the tongue, but to pull forward the rima glottidis from the posterior wall of the pharynx, and so to provide good conditions for the employment of the laryngoscopic mirror. It is probable that on the principles used by Kirstein, in what he calls autoscopy, i. e., laryngeal examination without a mirror, the examiner will be enabled with a little practice, to see a good deal of the larynx (especially its posterior part, which is the more important one), by direct vision, and without the use of the mirror. The method of the manipulations with the new instrument is well illustrated in a diagram presented. In the second diagram the position of the instrument in the throat is well shown. It will, as a rule, be necessary, even with the instrument, to have the movements of the child restrained by a sheet rolled around its arms and legs in the usual way, and to have it carefully held on the knees of an assistant, but with this the examination of the larynx can be made much more satisfactorily than with the ordinary tongue depressor.

"A simple method for the examination of young children is also given in the same number of "Progressive Medicine," which seems extremely practical and well worth noting. It was demonstrated by Lack, at a meeting of the Laryngological Society of London, about a year ago. The advantage of this second method is that no special instruments are required and no force is employed. It is described by Dr. Blockader as follows: "The infant is placed in the usual position for laryngoscopy, the index finger of the left hand is passed well into the mouth, and the terminal phalanx hooked around the hyoid bone, which is pulled forward. The rest of the finger acts as a tongue depressor, the knuckle as a gag, while the left thumb under the chin serves to steady the head. With the use of a small mirror the larynx can now be easily seen. The method causes no pain, and requires no anesthetic, while the younger the infant the less is the resistance and the easier the examination."

Vol. II appeared in July, 1899, containing Surgery of the Abdomen, including Hernia, Gynecology, Diseases of the Blood, Diathetic and Metabolic Disorders; Diseases of the Spleen, Thyroid Gland and Lymphatic System. The contributors to this volume are: W. B. Coley, John G. Clark, Alfred Stengel and Ed. Jackson, the latter editing the department on Ophthalmology, which occupies 86 pp. This embraces all the marked advances made in 1898 in our specialty. In his address as chairman of the Section on Ophthalmology of the British Medical Association for the meeting of 1898, Argyll

Robertson said: "During the twelve months that have elapsed since the last meeting of the Association no startling novelty or important advance in our department of medical science has, as far as I am aware, been communicated to the profession. Ophthalmology, indeed, seems to have attained such a development that a short time may probably elapse ere any further important advance is made. In fact, it is advisable occasionally to rest in that constant strain after novelties, and to consolidate, strengthen and perfect the advances that have already been made." Thus the testing and confirmation of discoveries previously announced has been the work of the past year, and in many directions it has been most profitable.

The principal new advances during the year have been: the localization of foreign bodies within the eye and orbit by the Roentgen ray; the use of holocain as a local anesthetic; the use of suprarenal extract and the operative treatment of high myopia. Extracts from articles on these subjects are given. I heartily recommend this work as a method of keeping in touch with recent advances in general medicine as well as ophthalmology.

H. V. W.

#### COLOR-BLINDNESS.

NAGEL, W. (*Die Diagnose der praktisch wichtigen angeborenen Störungen des Farbensinnes*, Wiesbaden, Bergmann, 1898.)

In the pages before us the author has discussed all the most practical tests for the detection of color-blindness and has added two of his own. For these two he claims greater accuracy and ease in execution. He thinks for most cases that his color tables combined with the Holmgren wool test will be found to give complete satisfaction. For cases of simulation Pflüger's test (Florbuch) is valuable. For physicians who are quite familiar with the visual acuity of the color-blind, he recommends his apparatus of "color comparison" for the detection of red and green blindness.

Part I is devoted to a consideration of the disturbances in color sense, both congenital and acquired. These points are discussed under the following heads: Total Color-Blindness, Partial Color-Blindness, The Practical Significance of Color-Blindness, The Frequency of Color-Blindness and The Vision of the Partially Color-Blind.

Part II is given up to the description and discussion of the various methods for the detection of color-blindness. In this section he describes his instrument, the principle of which is as follows: Two lights, one red and the other yellow, are shown to the patient. It may be added that these lights can be made more or less intense in brightness as occasion requires. Every red-green-blind person can by varying the intensity of the light make both colors similar while for those who are not color-blind, this result would be impossible. The colored lights are produced by illumination from behind of two strips of colored glass. He then gives a detailed account of the

mechanical construction of the instrument. (This will be found in the *Archiv. f. Augenhkde.*, 1898.) To give an example of how he makes the test, the patient is placed at a certain distance in front of the instrument which is provided with a funnel-shaped opening. The lights are so fixed that a dark red and a brilliant red are presented to the patient's view. The patient is then asked what colors he sees. The normal will answer bright red and dark red. The green-blind person will answer yellow and red or yellow and green. By varying the intensity of the lights, he is able to detect varying degrees of red green-blindness. Then follows an explanation of the physiology of the test.

He then describes his tables for the detection of color-blindness. These tables are 12 in number, each containing a ring composed of colored points. Three of the rings are of one color, namely, green, gray and purple, and in these are points of lighter and deeper shade arranged irregularly and in rows or series. In the other nine rings, grouping of the colors are made with the idea of presenting those colors which appear to the color-blind as similar. The color-blind sees in most of these simply a transition from lighter to darker points and only when the tables are seen at very short range and by one who is skilled can small differences in color be distinguished. Of course looking at the tables at short range is not permissible when the test is made.

Part III. In this section he speaks of the significance and relative value of the several methods for detecting color blindness, as for instance, the best method to be employed in testing, for collecting statistics on the subject of color-blindness, for the examination of sailors and of railroad employees, for simulation of total or of partial color-blindness. He concludes his essay with a few remarks upon the method when the examiner is color blind. The original part of the work is certainly valuable and in addition to this the author has given us a practical epitome of the works of others on this subject.

R. L. R.

#### INJURIES OF THE EYE.

PRAUN, E., Darmstadt. (*Die Verletzungen des Auges.* J. F. Bergmann, Wiesbaden, 1899. 533 pages, p. 12 mk. or \$3.00.)

The subject of this author's work has not been treated in a complete monograph since the establishment of antiseptic and aseptic treatment of wounds. He describes all the injuries of the eyeball and its changes, the diagnosis and differential diagnosis and the therapy, and cites illustrative cases, as well as refers extensively to the literature. The two most complete works on wounds of the eyeball are Cooper's (1859) and Lawson's (1867). The other literature is scattered among our periodicals and text books. This is the most complete work that has ever been offered. The only criticism that I can make is the strange absence of illustrations. In a book of this kind the value of the text would be doubled by the free use of good pictures like Czermak has in his work on "Operative Ophthalmology" (*Augenärztlichen Operationen*).

Two sizes of type are used in the body of the book; the larger containing the description, course, diagnosis and treatment; the smaller type is for theoretic considerations, pathologic anatomy and case histories. This is a form of printing which is much used by German medical publishers which might be followed with benefit in this country. We are enabled, at once, to find our subject and all its practical points, and, if desired, we may go deeper by reading the smaller print. Many case histories are briefly described, which have occurred in the practice of the author and from the clinics of Drs. Weber. The subjects of military surgery and electrical injuries are fully treated. The work comprises the following chapters: I. Forms of ocular injury. II. Etiology. III. Mechanism. IV. Complications. V. Diagnosis. VI. Prognosis. VII. Prophylaxis. VIII. Treatment. IX. Statistics. X. Medico-Legal aspects of Ocular Injuries. These comprise 159 pp. Then the author goes into detail in the balance of the book in describing injuries of the different structures of the eyeball. A most complete index, both of subjects and authors, is appended. The editor endorses this book with enthusiasm and considers that a translation would prove a valuable addition to English literature. To those of us who read German, the work is commended in its present form.

H. V. W.

**THE NORMAL ANATOMY OF THE OPTIC NERVE ENTRANCE IN  
CONNECTION WITH OPHTHALMOSCOPIC AND ANAT-  
OMIC FINDINGS.**

ELSCHNIG, ANTON, Privatdozent in Wien and Zoth, O., Prof. in Graz. (Normale Anatomie des Sehnerveneintrittes, Augenärztlichen Unterrichtstafeln f. den akademischen und Selbst-Unterricht; Prof. Dr. H. Magnus, Heft XVI; J. U. Kern, Breslau, 1899. p. 15 mk. or \$3.50.)

There has not yet appeared any number of the ophthalmic lecture charts that has given the editor more pleasure nor to which he has devoted more careful study than Nos. 16 and 17, the contents of which are noted below.

These two numbers are characterized by illustrations which are perfect examples of the photo-engravers art. The text accompanying each is clear and every word is golden. As I have previously noted, by following the plan of lectures given in these ophthalmic lecture charts and accompanying text, our students will receive the most modern ideas of the subject in most palatable and easily digestible style. I heartily recommend that they find places, not only in the library of the teaching ophthalmologist of the large city, but in the office of his colleague who is not similarly so favored.

The work of Elschnig consists of 26 pp. of text describing various forms of the normal optic nerve entrance, from microscopic preparations of 50 normal eyes which he had also examined during life. But little theorization is given in his descriptions, the points in each case being briefly described. Beside the

scientific value of Elschmig's description and work, the editor would call attention to the beautiful reproductions of the microscopic preparations by Dr. Groth which have been made without any retouching whatever. Plates 1—12 are enlarged 25 diameters. Plates 13—18, 75 times. There are 12 double and 6 single plates on cards 6"x10".

The cases show the various forms of physiologic excavation and conus together with opaque nerve fibers, pigment ring, etc. The specimens have been prepared either in formalin or Mueller's fluid variously stained. For the laboratory expert and for teaching this series of charts is particularly valuable. H. V. W.

#### THE BACTERIA OF THE EYE.

SCHANZ, FRITZ, Dresden. (Die Bakterien des Auges, Augenärztlich Unterrichtstafeln f. den akademischen und Selbst-Unterricht, Prof. Dr. H. Magnus, Heft XVII; J. U. Kern, Breslau, 1899. p. 10 mk. or \$2.50.)

Bacteriologic investigation has proven of considerable value to ophthalmology. Although it is not yet possible in every case to prove the etiology of external eye diseases, yet it is of great value to the practitioner to examine bacteriologically his cases. Often a simple smear preparation will show the difference in the nature of two diseases whose clinical picture is practically the same, often agar or serum culture will give the differential diagnosis between two similar appearing cases.

The nine colored charts and the 21 pages of accompanying text describe the 18 most common ocular bacteria. The appearances are shown in the colors as stained and are beautifully reproduced. All the pictures are magnified as shown by the Zeiss' oil immersion objective 1/12 and the No. 4 ocular. In the text a description of each form of the bacteria together with its growth and staining and diseases in which it is found is given. The bacteria described and illustrated are:

Staphylococcus pyogenes, Streptococcus pyogenes, Gonococcus, Diplococcus lanceolatus, Diphtheriabacillus, Xerosisbacillus, Diplobacillus of Morax Axenfeld, Koch-Weeks' Bacillus, Tuberclebacillus, Bacillus pyocyaneus, Leprabacillus, Bacterium coli commune, R. Pfeiffer's capsule-bacillus, Actinomyces, Aspergillus fumigatus, Aspergillus glaucus. H. V. W.

#### WILLIAM'S' STANDARD TEST-TYPES.

WILLIAMS, C. H., Boston. ("Standard Test-Types for Determining the Acuteness of Vision." Published by Millar and Weltsch, 38 West St., Boston.)

A series of 15 cards 3 1/2x9 inches, 12 of which contain a single line of test-types, ranging from the 20 feet to 50 feet size, and 3 signs intended to represent the semaphore arms.

These cards have been prepared in accordance with Snellen's formula, the heights of the letters subtend an angle of five minutes, at the distances in English feet printed above each line, and

the width of the different parts of the letter an angle of one minute. On the semaphore cards the arms are of the same size as the letters on the 20 foot card, and when seen at a distance of 26 feet these signals will appear of the same size as a standard semaphore arm 46 inches long, seen against a sky background, at a distance of 2,600 feet.

In testing the vision of railroad employees these cards will be found of great value, as they may be easily shifted and thus memorizing of the letters is not possible. The size of the packet makes this series of test cards very convenient for hospital or house visits.

H. V. W.







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AN ANALYSIS OF SIXTY-THREE EYES AFFECTED  
WITH CHRONIC GLAUCOMA, WITH SPECIAL  
REFERENCE TO THE VISUAL FIELD.\*

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According to Snellen,† the form and manner in which the visual field contracts in glaucoma was first accurately studied by Haffmans, in 1860, under the guidance of Donders. Since this time the literature pertaining to this disease has so greatly developed that it would be impossible, even if it were profitable, to make reference to it in the present communication. Those interested will naturally turn to Stirling's admirable monograph‡ where a full bibliography will be found.

Exception will be made to three communications, namely, those of Bunge,§ Bjerrum|| and Zentmayer and Posey,¶ which deal particularly with the subject of the

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\*Read before the Ophthalmic Section of the A. M. A. at Columbus, June, 1899.

†The Ophthalmic Review, Vol. X, 1891, p. 39.

‡Glaucoma: Its Symptoms, Variety, Pathology and Treatment. Jones H. Parker, St. Louis. 1898.

§Ueber die Gesichtsfeld und Faserverlauf im optischen Leistungs-Apparat., Halle, 1884.

||Ueber eine Züfugung zur gewöhnlichen Gesichtsfeldmessung und über das Gesichtsfeld beim Glaukom. Verhandlungen des X Internationalen Medicinischen Congresses, Berlin, 4-9, August, 1890, IV. Also Ophthalmic Review, Vol. IX, 1890, p. 104.

¶A Clinical Study of One Hundred and Sixty-seven Cases of Glaucoma Simplex. Archives of Ophthalmology, XXIV, 1895, p. 378.

present paper, which is based upon a study of sixty-three eyes suffering from chronic glaucoma and an examination of one hundred and eighty-four charts of the visual field, which, with the exception of thirty-six, were mapped by myself, and most of these thirty-six prepared by assistants, I have verified.

I. *The Commonly Described Visual Field-Phenomena, or So-called Typical Forms of Contraction.*—The earliest defect is discoverable at the outer margin of the nasal field and cannot always be detected with coarse test objects, but is usually to be found in subdued light (Priestley Smith), or by employing gray patches of different intensity on a white ground, as designed by Ward Holden (Fig. 1). In place of early nasal contraction, there may be a concentric restriction (Fig. 2). With either of these beginnings the nasal field may gradually disappear, while the temporal field remains, either with or without contraction of the preserved area, forming an almost typical lateral hemianopic field (Fig. 3). Or else, in addition to the inner field, the upper and inner and the lower and inner portions become darkened, again forming a hemianopic type in which the dividing line between the seeing and blind areas assumes an oblique or irregular direction (Figs. 4 and 5).

As time wears on, the temporal field becomes involved until the sentient area is reduced to a small oval, extending from the fixing point toward the blind spot, or the oval may be replaced with a narrow, slit-like field extending outward, as described by Priestley Smith. The gradual reduction of the temporal field is illustrated in Figs. 6, 7 and 8. Within these narrow sentient patches vision may still be sharp, even when they have been reduced to a mere slit, as is illustrated in Figs. 9 and 10.

Not always, however, does the involvement of the temporal field permit central fixation, which may be cut out, as in Fig. 11, or the whole field may become dark, the only preservation of a sentient area being a patch downward and outward, somewhat remote from the fixing point (Fig. 12). Gradually these areas are destroyed and the entire field becomes dark.

II. *The Horizontal Hemianopic Visual Field.*—In a

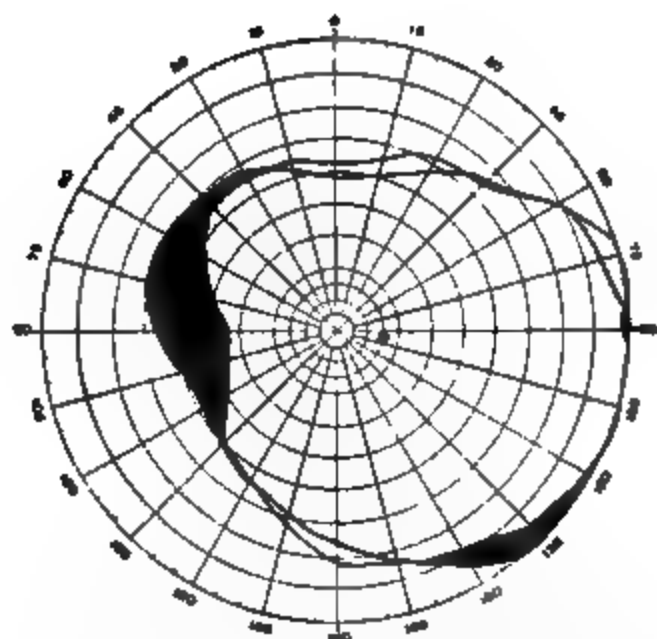


Fig. 1. Chronic glaucoma, male, aet. 72. Visual field of right eye, early nasal contraction, V = 6-13. See No. 4, table of cases.

Fig. 2. Chronic Glaucoma, female, aet. 59. Visual field of right eye, concentric contraction, V. = 5-7.5. See No. 1, table of cases.

Fig. 3. Chronic glaucoma, female, aet. 50. Visual field of right eye, hemianopic type, later stage of Fig 2. V = 6-60. See No. 1, table of cases.

Fig. 4. Chronic glaucoma, male, aet. 71. Visual field of left eye, hemianopic type, with irregular dividing line between seeing and blind area, V = shadows. See No. 12, table of cases.

Fig. 5. Chronic glaucoma, male, aet. 71. Visual field of right eye, hemianopic type, with oblique dividing line between seeing and blind area. V = fingers at 2 feet. See No. 12, table of cases.

Fig. 6. Chronic glaucoma, male, aet. 60. Visual field of left eye, trowel-shaped sensitive area chiefly on temporal side, V = 6-60. See No. 5, table of cases.

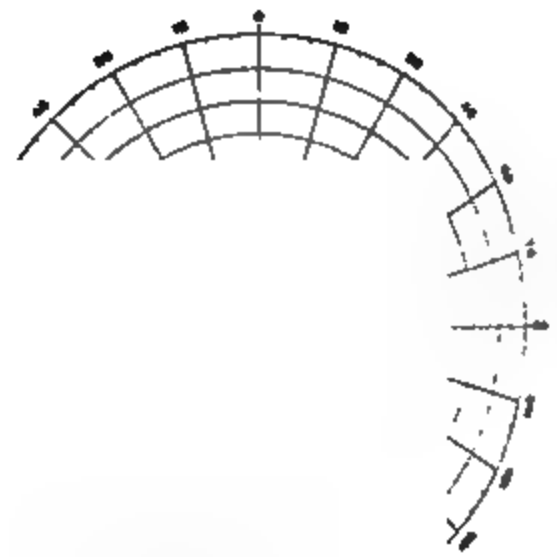


Fig. 8. Chronic glaucoma, male, aet. 60. Visual field of left eye, small sentient area on temporal side, V = i.p. Same case as is illustrated in Fig. 7, 2 months later See No. 5, table of cases.

Fig. 7. Chronic glaucoma, male, aet. 60. Visual field of left eye, small, sentient area on temporal side, V = counting fingers. Same case as is illustrated in Fig. 6, 4½ months later See No. 5, table of cases.

Fig. 9. Chronic glaucoma, female, aet. 48. Visual field of right eye, small sentient area on temporal side, V = 6-9. See No. 23, table of cases.

Fig. 10. Chronic glaucoma, female, aet. 48. Visual field of right eye, minute, slit-shaped sentient area, V = 6-12—. Same case as is illustrated in Fig. 9, 2 years later See No. 23, table of cases.

Fig. 11. Chronic glaucoma, male, aet. 70. Visual field of left eye, sentient area preserved on temporal side, with complete cutting out of fixation, V = counting fingers outward at 1 foot. See No. 31, table of cases

Fig. 12. Chronic glaucoma, female, aet. 55. Visual field of left eye, sentient patch preserved downward and outward, somewhat remote from fixing point, which is obliterated, V = shadows outward. See No. 17, table of cases.



few instances cases of chronic glaucoma furnish a type of visual field which is almost typically that of superior horizontal hemianopsia, both upper fields, or the greater portion of them, being wanting; there is no great contraction of the nasal field below the horizontal line, while there may or may not be contraction of the preserved temporal field below this line. The ultimate course of a field of this kind appears to be a gradual destruction of the sentient areas, more rapidly on the nasal than on the temporal side, until there is left a preserved patch passing from the fixing point slightly upward and outward and downward and outward. This is illustrated in Figs. 13, 14 and 15.

A very common form of hemianopic type which might be here mentioned is the one in which there is first a loss of a quadrant, usually the upper and inner quadrant, simulating the so-called quadrant anopsia, a type, however, which is more likely to assume a sectional defect, including the whole supero-nasal quadrant, and which is illustrated in Fig. 33, although the cut is used for another purpose.

### III. *Various Atypical Contractions of the Visual Field.*

—It is perhaps not too much to say that the visual field-restrictions may present themselves in almost any form, but that there is a tendency for the more unusual varieties to classify themselves in several groups, to which I will venture to apply the following terms:

(a) The *acorn-field*, or one which, as the name implies, simulates in shape somewhat the outlines of an ordinary acorn (Fig. 16). The subsequent fate of the sentient area is probably the same as that described in the typical cases, unless, perchance, it may be the earlier stage of what terminates in the so-called, to borrow a term from J. A. Lippincott, *dumb-bell field* (Fig. 17).

(b) The *angled field*, in which there are a series of peripheral re-entering angles (Fig. 18) quite suggestive of the field that is sometimes seen in the atrophy of locomotor ataxia, to which reference has been especially made by Berger.\*

(c) The *kite-shaped field*, either with the long axis

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\*Archives of Ophthalmology, XIX, p. 429.

Fig. 13. Chronic glaucoma, female, aet. 72. Visual field of left eye, superior horizontal hemianopic type, V = 6-15. See No. 11, table of cases.

Fig. 14. Chronic glaucoma, female, aet. 73. Visual field of right eye, superior horizontal hemianopic type, V = 6-15. See No. 10, table of cases.

Fig. 15. Chronic glaucoma, female, aet. 72. Visual field of left eye, sentient patch preserved on temporal side, V = 6-9. See No. 11, table of cases.

Fig. 16. Chronic glaucoma, male, aet. 73. Visual field of left eye, acorn-shaped field, V = 6-15. See No. 20, table of cases.

Fig. 17. Chronic glaucoma, right eye, aet. Visual field of right eye, dumbbell-shaped field, V = 15 C. (J. A. Lippincott, American Textbook of Diseases of the Eye, Ear, Nose and Throat, page 361.)

Fig. 18. Chronic glaucoma, male, aet. 29. Visual field of right eye, angled field, V = 6-15. See No. 55 table of cases.

vertical (Fig. 19), which must be uncommon, as it occurs only once in my collection, or with the long axis horizontal (Fig. 20); in which, however, the shape of the kite is not so accurately preserved as in the other variety.

IV. *Various Forms of Scotoma.*—In 17 of the 63 examinations positive scotomas were demonstrated, as follows: 5 paracentral, 5 annular, semiannular or crescentic in close relation to the fixing point, 3 central, 1 disseminated, and 3 color scotomas, in which there was a loss only of the color sense. These scotomas showed no predilection for any special type of field, and were found with indifference in the various forms of contracted field already recorded. Neither did the scotomas assume a definite or characteristic shape, as, for example, they do in some varieties of toxic amblyopia. Thus, the annular scotoma may be narrow, its long axis horizontal, extending from the blind spot to about an equal distance on the nasal side of fixation (Fig. 21), or broad, the greatest breadth being upon the nasal side (Fig. 22). The semiannular and crescentic scotomas may be above, below and extending more than three-fourths around the fixing point and including the blind spot (Fig. 23), or up and out, again joining the blind spot (Fig. 24), all of these, like the complete annular scotomas, varying in breadth. The paracentral scotomas, which did not assume a crescentic type, such as has just been described, in most instances selected a position below the fixing point, that is below the horizontal line and became continuous with the natural blind spot, for example, in Figs. 25 and 26. The relation of the disseminated scotomas, which in one sense were also paracentral, to the subsequent obliteration of part of the field will be discussed in a later paragraph. Occasionally a paracentral scotoma not continuous with the blind spot and also below the horizontal line may be found, a scotoma, moreover, which is not absolute but in which the perception for color is lost while white appears gray or indistinct, as, for example, in Fig. 27. The central scotomas also varied, sometimes in their least pronounced form being a relative defect of small dimensions directly over the fixing point, as in Fig. 28, or absolute and large, including the fixing point and extending twenty degrees below it and ten degrees on all other



**Fig. 19.** Chronic glaucoma, female, aet. 70. Visual field of right eye, kite-shaped field, V = 8-30. See No. 59, table of cases.

**Fig. 20.** Chronic glaucoma, female, aet. 36. Visual field of left eye, somewhat kite-shaped field, long axis horizontal, V = 6-13. See No. 37, table of cases.

**Fig. 21.** Chronic glaucoma, male, aet. 60. Visual field of left eye, annular scotoma V = 6-6 —. See No. 30, table of cases.

**Fig. 22.** Chronic glaucoma, male, aet. 40. Visual field of right eye, broad annular scotoma, V = 6-7.5. See No. 32 table of cases.

**Fig. 23.** Chronic glaucoma, female, aet. 50. Visual field of left eye, semi-annular scotoma below fixing point, V = fingers at 50 cm. See No. 44, table of cases.

**Fig. 24.** Chronic glaucoma, female, aet. 55. Visual field in left eye, crescentic scotoma extending from blind spot up and in V = 6-6. See No. 41, table of cases.

sides of it, as, for example, in Fig. 29, or just including the fixing point and passing between it and the blind spot, with quite a sharp line dividing the scotomatous and seeing areas, forming the so-called hemianopic type of scotoma, as in Fig. 30.

To one case of annular scotoma special reference should be made, as it does not seem to belong to any of the classes thus far described, and is a single observation. The scotoma was a broad band remote from fixation and concentric with the limit of the form field, from the outer border of which it was separated by a narrow strip of sentient surface. The inner side of this scotoma, comprising about one-third of it and continuous with the defect of the field upon the nasal side, was absolute, the outer two-thirds relative. At a later date, when the visual field had much contracted, a semiannular scotoma now absolute, and having somewhat the same position as its predecessor, was demonstrable. This case is illustrated in Figs. 31 and 32.

V. *Sentient Islands within the Darkened Area.*—In exact contrast to the various forms of scotoma thus far described, in a few instances a small patch of preserved field occurs within the darkened area. Two such examples are present in the series (Figs. 33 and 34). Perhaps they might be interpreted in another manner and probably would be by some observers, namely, that the darkened area should be regarded as a large scotoma which has so encroached upon the visual field as to leave the sentient area here pictured.

VI. *The Color Field.*—Observations on the color field have not been made in all the examinations, and therefore they do not possess the same value as the others. It is usually stated that in glaucoma the color fields present a restriction corresponding with that of the form fields, while in simple atrophy of the optic nerve the peripheral color field, especially for red and green, is markedly deficient. Within limits this may be true, but cannot be relied upon as a test, as frequently the color field is correspondingly much more contracted than the form field and may, moreover, present cuts which are not demonstrable in the visual field for form, as, for example, in Fig.

Fig. 25. Chronic glaucoma, male, aet. 69. Visual field of right eye, general contraction with re-entering angles and paracentral scotoma, V = 6-22. See No. 20, table of cases.

Fig. 26. Chronic glaucoma, female, aet. 59. Visual field of left eye, concentric contraction, large paracentral scotoma, V = 6-100. See No. 42, table of cases.

Fig. 27. Chronic glaucoma, male, aet. 80. Visual field of right eye, concentric contraction, relative paracentral scotoma, V = 4-80. See No. 4, table of cases.

Fig. 28. Chronic glaucoma, male, aet. 61. Visual field of left eye, loss of upper and inner half of field, with small central relative scotoma, V = 6-22. See No. 39, table of cases.

Fig. 29. Chronic glaucoma, male, aet. 74. Visual field of right eye, concentric contraction, large central scotoma, V = fingers at 1 metre. See No. 24, table of cases.

Fig. 30. Chronic glaucoma, male, aet. 71. Visual field of right eye, concentric contraction, large nearly central scotoma of hemianopic type, V = counts fingers. See No. 20, table of cases.

35. Or, again, there may be an extensive defect for colors in the form of what may be designated as a huge relative scotoma, with only small irregular patches of preserved color sense, as in Fig. 36.

*General Remarks.*—Although it is commonly stated that the nasal half of the field most frequently suffers and is earliest affected, it is well known that this is not a constant rule. For example, Bunge\* found in one hundred cases, a defect on the nasal side alone in 27; predominating in the nasal portion in 44; field remaining in the form of an oval around the papilla in 4; in 9 cases the whole field was destroyed, centre included, except a small portion on the temporal side; a central or paracentral scotoma, with or without some nasal contraction, in 4; contraction upward alone in 2; concentric restriction in 6; restriction chiefly on the temporal side in 2. If a similar analysis is made of my own examinations, we find concentric restriction in 13; complete loss of the visual field, except a small patch upon the temporal side, fixation being preserved, in 13; contraction predominating on the nasal side in 9; complete loss of the nasal half in 8; loss of the supero-nasal quadrant in 6; contraction chiefly upward in 3; destruction of the whole field, centre included, except a small portion on the temporal side, in 3; loss of the infero-nasal quadrant in 2; contraction chiefly of the lower field in 1, and contraction chiefly outward in 1. In several cases the vision was so imperfect that it was impossible to do more than find light perception, and in 2 others the field was so irregular that it is difficult to make any exact classification. It is, of course, understood that the most marked defect in the visual field is here recorded. It should also be noted that in some cases of concentric contraction the nasal field is subsequently more rapidly lost than the temporal, and finally results in complete loss of the nasal half. What is, however, particularly striking in my series is the frequency of central scotomas, which I have not separately classified, as Bunge has, but which occurred in 17 of the 63 examinations, and were found with various forms of contraction and restriction of the visual field.

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\*Loc. cit. Quoted by Stirling.

Fig. 31. Chronic glaucoma, male, aet. 50. Visual field of right eye, nasal contraction, broad annular scotoma, V = 6-9. See No. 50, table of cases.

Fig. 32. Chronic glaucoma. Visual field of same patient as represented in Fig. 31, nine months later, V = 1-24. See No. 50, table of cases.

Fig. 33. Chronic glaucoma, female, aet. 75. Visual field of right eye, loss of supero-nasal quadrant with sentient island in dark area, V = 6-5. See No. 3, table of cases.

Fig. 34. Chronic glaucoma, male, aet. 73. Visual field of left eye, loss of most of nasal and lower field with sentient island in lower dark area, V = 6-15. See No. 29, table of cases.

Fig. 35. Chronic glaucoma, male, aet. 50. Visual field of right eye, showing character of contraction of color field with sharp cut above. There was also annular scotoma. See Fig. 31, taken at a later date, V = 6-9. See No. 6, table of cases.

Fig. 36. Chronic glaucoma, female, aet. 50. Visual field of right eye, almost complete loss of color perception represented by dotted area, except in spaces included in broken lines where blue and red were perceived. V = 5-7. See No. 1, table of cases.

It is interesting to construct a map representing the average of all the examinations, that is to say, of the 184 charts of the visual fields. If this is done it is as follows:

Outward 66 degrees,  
 Outward and upward 29 degrees,  
 Upward 26 degrees,  
 Upward and inward 24 degrees,  
 Inward 25 degrees,  
 Inward and downward 27 degrees,  
 Downward 37 degrees,

Downward and outward 64 degrees (See Fig. 37).

If a similar average is made from the hospital cases (17 eyes, 36 charts),\* it yields the following results:

Outward 60 degrees,  
 Outward and upward 37 degrees,  
 Upward 32 degrees,  
 Upward and inward 23 degrees,  
 Inward 21 degrees,  
 Inward and downward 21 degrees,  
 Downward 33 degrees,

Downward and outward 43 degrees (See Fig. 38).

If a similar average is made of the cases seen in private practice (46 eyes, 148 charts), it yields the following results:

Outward 68 degrees,  
 Outward and upward 27 degrees,  
 Upward 25 degrees,  
 Upward and inward 24 degrees,  
 Inward 26 degrees,  
 Inward and downward 29 degrees,  
 Downward 38 degrees,

Downward and outward 69 degrees (See Fig. 39).

It will be observed then, first, that there is a close correspondence between the average field of all the eyes and the average field of the eyes seen in private practice, and, indeed, that there is no very great difference between the average visual field secured from the hospital cases and from those in private practice.

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\*The small number of hospital cases is accounted for by the fact that only those fields are included which I personally mapped, or which were mapped under my supervision, or having been mapped in my absence, were afterward verified by myself.

Fig. 37. Visual field resulting from an average of all of the examinations, 184 charts.

Fig. 38. Visual field resulting from an average of all of the hospital examinations, 3 charts.

Fig. 39. Visual field resulting from an average of all examinations made in private practice, 148 charts.

Fig. 40. Average field constructed by Zerkmayer and Posey in their 167 examinations.

If it is assumed that the average physiological limits of an ordinary working form-field, when this has been measured with a square of white 1 centimetre in width, are outward 90, upward 50, inward 55, and downward 72 degrees, it will be seen that in the average glaucoma field of this series there is a loss of 36 degrees outward, 24 degrees upward, 35 degrees inward and 35 degrees downward, or, in other words, that the nasal side has not chiefly suffered, but that there is very nearly a general restriction of the visual field. It is further interesting to compare these examinations with those published by Zentmayer and Posey, who found, in general terms, that an average form field was as follows: Outward 50.10, upward 31.75, inward 34.83 and downward 43.71 degrees—a slightly larger field than my average one, but also one, as these authors point out, in which there is no great tendency to nasal contraction, but, on the contrary, to general restriction. The accompanying diagram, kindly furnished by Dr. Posey, gives their average field. (See Fig. 40.)

The scotomas form, the most important feature of my analysis, having been found much more frequently than is common in the examinations of most observers. Indeed, Ole Bull\* states that while he has often seen enlargement of Mariotte's spot in cases of glaucoma, he has not been able to demonstrate the paracentral scotomas which several authors (Basevi, Bjerrum, Sachs.) have described. I have no explanation to make of this except that I am quite satisfied, whether we employ the method of Bjerrum or the ordinary careful method of systematically examining each meridian with small test objects, particularly with pieces of gray on white, that these scotomas can almost invariably be demonstrated. That I have not found them more frequently simply means that in my earlier observations I did not know how to look for them.

Of these scotomas, those which are annular, semi-annular and crescentic in shape are the most interesting. Of the first named variety, or, indeed, of the whole group, because the crescentic and semi-annular ones are probably earlier stages of what subsequently may or may not

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\*Perimetrie, Bonn, 1895, p. 76.



Fig. 41. Chronic glaucoma, female, aet. 55. Visual field of right eye, showing the mechanism of the loss of the lower and inner portion of the field with preceding development of scotoma, which gradually extends. See No. 40, table of cases.

Fig. 42. Later stage of Fig. 41. Visual field in part completely dark.

Fig. 43. Later stage of Figs. 41 and 42.

Fig. 44. Chronic glaucoma, male, aet. 44. Visual field of right eye, peripheral contraction and disseminated scotomas. scotoma enlarged up and out and produces Fig. 45. See No. 34, table of cases.

14 20 26

7  
2  
2



Fig. 45. Later stage of Fig 44, scotoma having broken through and produced wedge-shaped defect outward and upward.

become complete ring-shaped defects, much has been written to establish their etiological basis. It may be remembered that von Graefe himself, the discoverer of the condition, suggested that ring scotomas arise from central scotomas in which the previously darkened centre regained its functions. Since his time most observers have located the lesion in ring scotoma within the bulbus itself, disputing only whether the primary disease occurred in the choroid or in the retina.\* Ole Bull, for example, when describing syphilitic retino-choroiditis, with ring scotoma expresses the opinion that as a rule the retina is first affected, although he is not willing to state that the retina always is the seat of the primary disease, while Baas, on the strength of microscopic examinations, believes that the *primary* seat of the disease is in the choroid.

Dr. Burnett, however, more than twelve years ago, urged the study of ring scotoma as a possible manifestation of an extraocular lesion indicating an implication of the nervous apparatus, while not denying, of course, the intraocular origin of the condition under certain circumstances. He believed, basing his views on the distribution of the bundles of the optic nerve according to Bunge into the papillo-macular, intermediate and peripheral, that a circumscribed neuritis affecting only the intermediate fibres would produce a typical ring scotoma, and I have myself published one or two cases which indicate that this explanation is permissible, although I could not verify it by post-mortem examination. It must be confessed that this pathogenesis of ring scotomas when they occur in glaucoma is attractive, and would seem to accord with Bjerrum's idea that scotomatous defects are the result of a destruction of the fibres in the papilla at the margins or sides of the excavation, if we assume that the intermediate fibres of Bunge are especially pressed upon or destroyed.

It must be remembered, however, that disorders of the

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\*Those interested in the literature of ring scotoma should consult Burnett: Clinical Contributions to the Study of Ring Scotoma, Trans. Am. Ophth. Soc., 1887, p. 435.

Baas: Das Gesichtsfeld, Stuttgart, 1896, pp. 93-102.

Ole Bull: Loc. cit., pp. 36-53.

Baas: Ueber die Anatomische Grundlage des Ringskotoms, Archiv. f. Ophth., 1897, XLVII, 3 s. 642.

retinal vessels may produce a degeneration of the inner retinal layers and be followed by an ascending atrophy of the optic nerve, and that such degeneration, to quote Ward Holden, is seen most clearly after the complete stoppage of the retinal circulation by embolism of the retinal artery, and after long continued circulatory disturbances in cases of chronic glaucoma. Again Ole Bull, not in cases of glaucoma but in cases of retino-choroiditis with ring scotoma, was impressed with the shape of the scotoma, which was sometimes connected with the blind spot and in a certain sense followed the curve of the retinal vessels, and occasionally could be seen to be connected with positive changes in the vessel walls. Therefore we may, as a second possibility assume a retinal origin of these ring scotomas.

The central and paracentral scotomas may, it seems to me, be regarded as defects resulting, as before stated, from the destruction of fibres in the papilla, and are interesting particularly in their relationship to subsequent contractions or rather obliterations of portions of the visual field. It is a well known fact that in the scotomas of toxic amblyopia the defect occasionally reaches to the limits of the field for red, as a rule "breaking through" above and thus dividing the red field into a nasal and a temporal half. Finally, the entire field for red and for green may be abolished by an extension of the scotoma. In like manner a scotoma in cases of chronic glaucoma may break through, as it were. For example, Bjerrum has described a case in which a small paracentral scotoma was situated downward and inward from the fixation point. Two years later this scotoma had spread inward until it reached the periphery and outward underneath the fixation point, forming finally a visual field with a large sector-shaped defect upon the nasal side, or, in other words, a not uncommon form of visual field in glaucoma. If we study Figs. 41, 42 and 43 a somewhat analogous condition may be seen. In Fig. 41 there is a large scotoma downward and outward surrounded by an area in which the perception of form was not sharp, that is to say there was simply a shadow on a white object in the dotted area. Three months later this entire area had lost its function and the lower and inner portion of the field had

become dark, as in Fig. 42; while Fig. 43, constructed a week or two later, shows more accurately the exact changes which had taken place and the scotomatous area which remains between the blind spot and the periphery, and which no doubt is the forerunner of a cut in the field that will extend up to the blind spot. In a similar manner Figs. 44 and 45 may be studied, the large scotoma upward and outward having in a few months extended to the periphery making the sharp sector-like defect shown in Fig. 45. Not quite so certainly do the changes in Figs. 31 and 32 indicate the relation of the scotomas to the subsequent contraction of the visual field. It is probable that a scotoma such as is represented in Fig. 29 may be the forerunner of a visual field which terminates in the manner pictured in Fig. 11, that is with complete cutting out of fixation. It is needless to dwell upon this possible, perhaps I may say probable, origin of the larger visual field-defects in glaucoma. The examples given suffice to illustrate the idea.

I wish to refer again to the easily overlooked central scotomas, which may be relative and which do so much toward destroying the fixation in chronic cases of glaucoma. A very common example of this is seen in Fig. 28. Very similar and also easily overlooked central scotomas are sometimes present in toxic cases.

Bjerrum, who examines the field of vision by using a much smaller test object, or a much greater distance than is ordinarily employed, has frequently detected central or paracentral scotomas, and believes that they are peculiar in that they may spread toward the periphery in all directions, sometimes more in one direction than in another, except outward, where they never pass beyond the blind spot. In other words, the defective area wherever situated is in direct continuity with the blind spot. He points out that such scotomas differ topographically from those met with in primary optic atrophy, and therefore the field may in this respect be utilized as a differential test, and one, moreover, that is more accurate than when the color lines are contrasted with the lines for form. In my examinations I have not employed the method of Bjerrum, but only the ordinary perimeter, using small test objects and when necessary subdued light, and carefully examining

each meridian from fixation point to periphery. It will be seen from an examination of the charts representing the scotomas that there is a tendency for these defective areas to be continuous with the blind spot and not to pass much beyond it, or, in some instances, not beyond it at all. • There are, however, exceptions to this rule, as indeed, there were exceptions to the rule in Bjerrum's findings. This is particularly interesting because there is some uniformity in these results obtained by two different methods. Moreover, I am inclined to think that there is a marked distinction between the scotomas as I have mapped them occurring in my cases of chronic glaucoma, and those which would be found in simple atrophy of the optic nerve. The difference between them and those which occur in toxic and non-toxic retrobulbar neuritis is evident.

In resumé it may be stated:

(1) That while it is true that in typical cases of chronic glaucoma the nasal half of the field is earliest and most severely affected, this is by no means a constant occurrence, for if an average field of a large number of measurements is constructed, there will result a map which indicates general restriction, rather than restriction in any one direction, in this respect the observations being in accord with those of Zentmayer and Posey.

(2) That the color field is often more contracted proportionately than the form field, and that to attempt a differential diagnosis between simple atrophy and chronic glaucoma by an examination of the color field is not likely to lead to trustworthy results; again an observation in accord with those of Zentmayer and Posey.

(3) That scotomas are often found in cases of well-advanced chronic glaucoma, which may be ring-shaped, crescentic, paracentral or disseminated, and moreover, that these scotomas may be found by ordinary perimetric methods if care is taken to investigate each meridian and to use suitable test objects under varying degrees of illumination.

(4) That it is reasonable to assume with Bjerrum that the scotomatous defects are usually the result of the destruction of the fibres of the papilla at the margin or sides of the excavation, although it may be that some

scotomas, especially ring-shaped scotomas, should be accounted for by changes in the inner retinal layers.

(5) That these scotomas are topographically different from those which occur in simple atrophy and may be utilized as a differential test between the two conditions, as Bjerrum has already pointed out.

(6) That it is evident that in many instances the scotomas are the forerunners of large defects in the visual field, the scotoma "breaking through," as it were, until the darkened area reaches the limit of the form field in the periphery.

TABULAR STATEMENT OF SIXTY-THREE EYES WITH CHRONIC GLAUCOMA.

No.	Age.	General Health.	Ocular Examination.	Refraction and First Recorded Vision.	Visual Field.	Treatment.	Last Recorded Vision.	Remarks.
1	50	Good	Cornea anesthetic, a c shallow, deep cup. T + 2 O. D	+ 2 Ds $\ominus$ 0.60c ax 15.5-7.5 9.25.88	Concentric contraction, later loss of nasal half, final complete loss.	Myotics & strychnia. operation declined	1.17.98, V = 0	The vision of glaucomatous eye did not fall until 12.18.90, when it was 6-18. Patient not again seen until 1.12.92 when V was 0.
2	75	Asthma, sclerosis arterio	O. D shallow a c, T + complete glaucoma cup and halo	+ 6.24.89 + 50s $\ominus$ 0.50c ax 15.6-5	Loss of the supero nasal quadrant, with sensitive island in dark arc.	Eserine, later iridectomy	11.27.98, V = counting fingers	V of O. D. remained good for three years after iridectomy, then gradually failed.
3	75	Asthma; arterio. sclerosis	O. S. shallow a c, almost complete cup, broad halo, T +.	6.24.90, + 0.50s $\ominus$ + 0.50c ax traction 165 8-5	Slight concentric contraction	Eserine & strychnia	11.2.98, V = 6-9	Apparently never any rise of T or visual disabilities with this eye.
4	72	Good	O. D. a c normal, complete cup, venous pulse, halo T +.	11.11.90, + 1.50s $\ominus$ + 0.50c ax 90 6-12	Contraction moderate, chiefly nasal side, later scotoma.	Myotics, strychnia, bichloride of mercury	11.2.98 V = 4-40	Iridectomy always declined, slow development of lenticular opacity, with gradual change of refraction, which at last became myopic, preceded by development of astigmatism contrary to the rule O 75 ax 18. Patient persistently declined iridectomy, gradual obliteration of vision, with shrinking of field, never pain
5	60 M	Chronic bronchitis	O. S. a c normal. T + 3, shallow complete cup, halo, pupil fixed.	+ 3, 1 23.91, + 1s $\ominus$ + 90c ax 15.6-40	Complete loss of nasal field, with small trowel-shaped patch on temporal side.	Pilocarpin	10.1.95, V = 6	Patient declined operation at first examination; nine months later, when he returned for iridectomy, V had sunk to 6-50, cornea was steamy and vessels pulsating; left eye had been lost from inflammatory glaucoma four years previously
6	50 M	Good	O. D. a c shallow, T + 2, deeply cupped disc.	7.3.91, + 2.25c ax 90 6-9	Marked contraction on nasal side, with broad semi-annular scotoma on temporal side.	Eserine & strychnia later iridectomy	3.15.92, V = 1-24	Patient seen only once. The iridectomy had been performed elsewhere some years before
7	75 F	Senility, subject to neuralgia	O. S. former iridectomy slight lenticular opacity, atrophic disc, shallow	10.14.91, irregular astigmatism, V had Ows	Complete loss except small tongue-shaped patch on temporal side.	Strychnia	10.14.91, V = shadows	
8	40 M	Typh. fever 16 yrs. before illness since veins.	low cupped	9.13.92, + 50c ax 90 6-8	Complete loss of nasal half, trowel-shaped patch pres. on temporal side.	Myotics	9.13.92, + 50c ax 90 6-8	Patient seen only once in consultation

1072	F	Good	O. S. cornea anesthetic, faint pupil reaction, deep glaucoma cup, very full veins. T +.	O. S. complete cup - 2 D, halo, lenticular opacity 6-12	9.23.92, H fingers at 2 feet	Complete loss except a small patch surrounding fixation, most marked on temp. side and ab.	Myotics	9.12.92, + 50c ax 105, V - cones unite fingers	Patient seen only once in consultation.
1072	F	Good	O. D. lenticular opacity, complete cup - 2 D	O. S. complete cup - 2 D, halo, lenticular opacity 6-12	9.23.92, H fingers at 2 feet	Complete loss of upper half, moderate contraction of remaining half	Eserine	9.27.97, sees hand move	Patient not seen between first and last examination, always declined operation.
1172	F	Good	O. S. complete cup - 2 D, halo, lenticular opacity 6-12	O. S. complete cup - 2 D, halo, lenticular opacity 6-12	9.23.92, H fingers at 2 feet	Complete loss of upper half, with contraction of remaining portion.	Eserine	9.27.97, V - 6-9	Slight improvement between first and last recorded vision will be noted, although field had considerably contracted.
1271	M	Asthma	O. D. nuclear opacity, shallow pathological excavation.	O. D. nuclear opacity, shallow pathological excavation.	3.28.93, H fingers at 2 feet	Complete loss of nasal half, with contraction of preserved half.	Eserine	11.12.94, V - O	Patient not seen between first and last examination, operation originally declined, one month preceding last visit an attack which seems to have been acute glaucoma.
1371	M	Asthma	O. S. nuclear lenticular opacity, shallow glaucoma cup, T +.	O. S. nuclear lenticular opacity, shallow glaucoma cup, T +.	3.28.93, H fingers at 2 feet	Almost complete loss of nasal half.	Eserine	11.13.94, V - 1 p	Operation declined in this as in other eye, with result of gradual deterioration of V.
1443	M	Good	O. D. complete cup, venous pulse, small arteries, atrophic disc, T +.	O. D. complete cup, venous pulse, small arteries, atrophic disc, T +.	7.18.93, H faint 1 p		Eserine & atropine	11.17.93, V - O	
1543	M	Good	O. S. pupil semi-dilated, hazy cornea, shallow glaucoma cup, T + 1	O. S. pupil semi-dilated, hazy cornea, shallow glaucoma cup, T + 1	7.19.93 H - sees hand move	Small trowel-shaped patch on temporal side preserved, the rest dark.	Eserine & atropine, later iridectomy	11.17.93, + 2c ax 105, V - 1-12	
1655	F	Grippe, melancholia following menopause	O. D. pupil medium dilated, hazy cornea, typical glaucoma cup - 2.50 D, full veins, T + 2	O. D. pupil medium dilated, hazy cornea, typical glaucoma cup - 2.50 D, full veins, T + 2	10.16.93, H and As against rule 6-45	Contracted above and on nasal side.	Eserine, later iridectomy	7.1.95, + 2c ax 180 6-15	had healed without reaction.
1755	F	Grippe melancholia following menopause	O. S. semi-dilated pupil, fixed, hazy cornea, shallow complete glaucoma cup, T + 2.	O. S. semi-dilated pupil, fixed, hazy cornea, shallow complete glaucoma cup, T + 2.	10.16.93, shadows	A small patch preserved in the lower and outer quadrant where light was perceived.	Eserine & later iridectomy	7.1.95, 1 p	Iridectomy performed to test the temper of the eye preparatory to iridectomy upon the opposite eye.
1856	F	Incurable neurasthenia	O. D. greenish disc, complete cup - 2 D, halo, T + 2.	O. D. greenish disc, complete cup - 2 D, halo, T + 2.	7.2.94, + 1c ax 180 6-15	Concentric contraction, most marked downward and inward	Eserine & atropine	7.2.94, 6-15	Seen only once in consultation, advised iridectomy
1934	M	Incurable hemorrhoids	O. D. atrophic disc, deep glaucoma cup - 3 D, dark veins.	O. D. atrophic disc, deep glaucoma cup - 3 D, dark veins.	10.2.94, - 2c ax 105 sees hand move	Loss of the upper and inner quadrant including fixation.	Eserine	10.2.94, sees hand move	Patient seen only once, operation advised, O. S. normal.
2000	M	Good	O. D. sluggish pupil, complete glaucoma cup, -	O. D. sluggish pupil, complete glaucoma cup, -	12.5.94, + 1c ax 15	Contraction, general, with re-entering angles.	Myotics	10.11.93, counts fingers	Gradual contraction of field and increase of scotoma, operation never



21	60	M	Probably syphilitic	O. D. Iridectomy elsewhere 1 year before, clear coloboma, greenish disc, slow venous pulse.	6-23 4.25, - 25 + 1C ax V 6-15	Complete loss of nasal half with towel-shaped patch preserved on temporal side.	Esarine, strychnia, Nitro-glycerine, paracentesis cornea	1.17.96, V - 0	Accepted. Patient has been under treatment by a number of physicians and has had one attack of acute glaucoma in iridectomized eye; elsewhere has had severe attacks, repeated & was also appears to have been a secondary glaucoma after iritis. Patient seen only once, no further history.
22	50	F	Good	O. S. shallow a c, T + 2 D. cup - 2 D not quite to edge, broad nasal halo. O. D. oval pupil, no resists to light, cornea anesthetic, deep cup to edge - 2 D, T + 2.	4.13.96, + 2.25 ax 75 6-5 -	Slight contraction up and out and up and in.	Myotics	4.11.96, 6-5 -	
23	48	F	Repeated attacks of grippe	O. D. oval pupil, no resists to light, cornea anesthetic, deep cup to edge - 2 D, T + 2.	4.15.96, + 1.75 ax 50c ax 155 6-9	Great contraction, only a small patch remaining on temporal side with partial scotoma	Myotics, strychnia, biochloride of mercury	4.20.97, 6-12 -	Iridectomy always declined, a year after last rec. V. Patient went blind in a glaucoma attack and 8 months later developed hypopyon keratitis, cured with staphyloma resulting by saemisch section. Patient had iridectomy at other hands later on, result unknown.
24	73	M	Grippe	O. D. sluggish pupil, glaucoma cup 2 D, halo down and in, T +.	5.10.96, + 0.75 ax 150 5-23	Concentric contraction, later scotoma	Nitro-glycerine, strychnia, Myotics	11.25.96, V - fingers at one metre	
25	73	M	Grippe	O. S. glaucoma cup - 2 D, halo all around disc, guttate choroiditis T +.	5.10.96, + 0.50 ax 0.75c ax 30 6-9	Slight contraction upward and inward.	Myotics, strychnia, Nitro-glycerine	11.25.96, V - 6-9	
26	69	F	Good	O. S. oval pupil, light response, glaucoma cup - 2 D, beginning cataract, T + 1, a shallow.	7.11.96, H 5-25	Small patch preserved on temporal side.	Esarine, Myotics & strychnia	7.11.96, V - 5-25	Patient seen only once, operation advised but consent not obtained. O. D. totally blind from glaucomatous atrophy.
27	40	M	Albuminuria	O. S. semi-dilated pupil, sluggish light reflex, complete cup - 1 D, in an atrophic nerve, full veins pulsating.	2.1.96, - 2.50 D. with slight astigmatism, axis 100 against the fingers counts	Loss of lower and inner portion, red-green blindness and probably scotoma.	Esarine	6.23.96, V - complete fingers	Patient's blindness had existed in O. S. 3 years before his visit, previous to that time he is stated to have had good V.
28	69	M	Grippe, nephritic	O. D. vitreous opacities, cup but not entirely pathological, some periorbital, retinal hemorrhages and spots of choroiditis, T normal.	6.7.96, H 1 1/4-40	Sharp cut above with scotoma above fixing point.	Nitro-glycerine, general treatment for nephritis	8.13.96, 3 1/4-40	O. S. totally blind from secondary glaucoma but painless, present eye not typically glaucomatous.
29	73	M	Good	O. S. pupil semi-dilated, complete cup - 1 D, fine dotted choroid changes.	4.12.96, + 25 ax 105 6-16	Almost complete loss of nasal side with contraction of the temporal field.	Pilocarpine, later iridect	5.28.96, + 25 + 1.50c ax 150 6-25	This V. continued for about half a year, when word was received that it was failing, since then no history.

60-65	M	Occasional albuminuria, no casts	O. S. deep cup - 4 D. to edge of disc, broad annular area of choroidal atrophy, T normal.	5.23.97, - 1a C - 1c ax 75-6-6	Contraction upward and inward and perimacular scotoma, annular.	Eserine	9.10.97, V - 6-6
61-70	M	Feeble	O. S. iridectomy upward deep complete cup, guttate choroiditis.	1.20.97, + 2a C + 1c ax 150, fingers outward at 1 foot	Complete loss of nasal half, including fixation	Eserine, later iridectomy	1.20.97, V - sinners outward at 1 foot O. D. was entirely blind from glaucoma, both eyes had been iridectomized 7 years previous to his visit, has been in consultation; performed; not known.
72-80	M	Good	O. D. oval pupil, deep glaucoma cup to periphery, tortuous vessels, T +.	2.11.97, - 5.50a C - 1.50c ax 50-6-7.5	Partial loss of nasal field, large perimacular scotoma, broader on nasal side.	Eserine, later iridectomy	1.19.97, V - 6-6
83-90	F	Arteriosclerosis	O. S. beginning cataract, T +, shallow cup to periphery, roundish retinal hemorrhages.	6.18.97, - 1a C counts fingers at 1 foot	Contracted to small area around fixing point	Eserine, nitro-glycerine, iodide of sodium	7.23.97, V - 6-20 Some months later patient died of cerebral apoplexy.
94-100	M	Good	O. D. complete cup - 2 D, broad halo	6.22.97, + 1a C + 1c ax 15-6-12	Slight peripheral contraction, disseminated scotomas.	Pilocarpine	7.27.97, V - 6-6
106-71	M	Grippe, probably rheumatic, arterio-sclerosis	O. D. upward iridectomy, lens, iris, macula, retina, vessels below disc	7.10.97, + 2c ax 15-6-20	Only a small patch surrounding fixation point, slightly extended to the temporal side.	Strychnine and nitro-glycerine and iodide of soda	7.12.97, V - 6-20 This patient had double iridectomy in 1894 and later lost left eye by what probably was an attack of hemorrhagic glaucoma.
108-86	F	Several attacks of Grippe otherwise healthy	O. D. cornea slightly steamy, deep cup - 4 D, halo, unusually large veins, T + i.	10.2.97, + 0.50a faint l.p		Eserine, later iridectomy	6.22.98, Patient l.p V in this eye had failed for 6 or 7 years, 1 iridectomy performed to test the temper of the eye (Schweigger's rule)
117-87	F	Several attacks of Grippe otherwise healthy	O. S. faint corneal haze, glaucoma cup - 2 D, arterio-sclerosis and veins about normal in size, T + i.	10.2.97, + 0.50a 6-12	Irregularly contracted, greater contraction on the nasal side.	Eserine, later iridectomy	5.22.98, + 1a C - 2.50c ax 65-6-15
120-61	M	Good	O. D. shallow a. c. completely cupped disc - 2 D, epithelial choroiditis, T + i.	1.27.98, + 1c ax 180-6-22	Complete loss of upper and inner field.	Eserine, later iridectomy	6.15.98, V - 6-15
129-61	M	Good	O. S. shallow a. c. completely cupped disc - 2 D, epithelial choroiditis, T + i.	1.27.98, + 1a C + 1c ax H 6-60, ecc	Complete loss of upper and inner half with some contraction of remainder, small, nearly central scotoma.	Eserine, later iridectomy	6.15.98, V - 5-30
140-55	F	Chronic dyspepsia	O. D. nearly complete cup - 2 D, no vascularization	3.20.98, + 1.50 C + 50c ax V 0-6	Contraction of the preserved portion above strychnine	Myotics & strychnine	3.11.99, V - 6-6

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	several attacks of grippe	changes, halo, T + ? faint haze in cornea.		and outward, loss of the lower and inner field, paracentral scotoma.	later iridectomy	
4156 F	Chronic dyspepsia, several attacks of grippe	O. S, nearly complete cup, no vascular changes, T + ?	3 30.98, + 1.25 C + 50c ax V 6-6	Slight concentric contraction, paracentral scotoma up and out.	Myotics & 3.11.99, V = 6-6 strychnia, later iridectomy	Patient seen only once in consultation, no future history.
4250 F	Good	O. S, slightly hazy cornea, deep glaucoma cup almost to edge - 3 D, spots of pigment on lens, suggesting former iritis.	11.3.98, - 4s C - 1c ax 45 6.100	Concentric contraction, paracentral scotoma below.	Eserine 11.3.98, V = 6-100	
4350 F	Suffers much from neuralgia	O. D, deep cup not quite to edge, down and out choroidal atrophy, T normal.	1.25.99, - 7.50s C - 1c ax 150 6-12	Slight concentric contraction.	Myotics & 3.14.99, V = 6-10 strychnia	
4450 F	Suffers much from neuralgia	O. S, a c normal, T normal, deep cup - 2 D almost to nasal edge.	1.23.99, - 7.50s C - 50c ax 135, fingers at 50 cm	Deficient below, - semi-circular scotoma, embracing blind spot.	Myotics & 3.14.99, V = 6-6 strychnia	
4538 F	Indifferent	O. D, upward iridectomy, greenish disc, complete cup and halo.	1.29.99, - 6s C - 5c ax 105 4-100	Contracted, the greater contraction being on the nasal side	Strychnia, 3.14.99, - 6s C - 8c ax 105 6-20	Patient had iridectomy performed on this eye 15 years previously.
4638 F	Indifferent	O. S, disc atrophic with deep, complete glaucoma cup.	1.28.99, - 6s C - 5c ax. 85, counts fingers outward	Only small preserved patch on temporal side.	Pilocarpine and strychnia outward	Patient's eye iridectomized 15 years ago.
4760 M	Good	O. D, Steamy cornea, shallow complete glaucoma cup, T. +.	1.2.99, H - counts fingers	Only around fixing point.	Eserine & 9.2.99, V = nil later iridectomy	This case more accurately subacute glaucoma: after 8 days of eserine V rose to 6-20 with + 2 D. After iridectomy remained 6-20 for eight months, when there was sudden failure in V, resulting in blindness. O D was completely blind and the disc deeply-cupped.
4850 M	Good but probably syphilitic	O. S, pupil irregular, complete cup, T. +.	5.1.95, V = 5-22	Complete loss of nasal field, narrow tongue-shaped area preserved on temporal side.	Eserine, bichloride 5-15 ry, later iridectomy	
4950 M	Good	O. S, cup not quite complete, T. +.	6.29.91, V = 6-60	Moderate contraction upon nasal side.	Iridectomy 7.31.91, V = 6-20	
5053 F	Good	O. D, gray disc, large shallow cup, T. + ?, some macular choroiditis.	2.8.93, no correction astigmatism H, V = 6-60	Slight contraction about equal on nasal and temporal sides.	Eserine 2.8.93, V = 6-60	Patient not seen again.
5164 M	Good	O. D, a c about normal, T. +.	4.4.93, H 6-22	Almost complete loss of	Eserine & 6.19.93, V =	Iridectomy advised but declined. It



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6364	F	Good	vessels to nasal side, T. not elevated.	7.12.98, H 2 22	the contraction being slightly greater on the nasal side. Egg-shaped field with long axis horizontal and the contraction slightly greater on nasal side.	Myotics	7.12.98, V = 2-22	Patient seen only once.
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## ANALYSIS OF TABLE.

The refraction of the 63 eyes was as follows:

H. 20.  
M. 1.  
H. As. 24.  
M. As. 11.  
Irregular As. 1.  
Mixed As. 1.  
Not recorded. 5.

Of the cases showing corneal astigmatism, the meridian of greatest refraction was with the rule 10 times, and against the rule 26 times. It is quite likely that if all of the 20 eyes recorded as H. only, had been carefully examined for astigmatism with the ophthalmometer, most of them having been seen in hospital practice, the number of astigmatic eyes would be greater, and those with the astigmatism against the rule proportionately greater.

Eighteen of the 63 eyes were iridectomized.

V. remained practically as good as before the operation for 3 years in 1; for 2 years in 1; for 14 months in 1; for 1 year in 1; for 8 months in 1; for 6 months in 1; for 1 month in 2. V. was slightly improved 6 months after operation in 2; 2 months after operation in 1; 1 month after operation in 2. V. continued to decline after operation in 1. Two eyes were iridectomized which were practically blind in order to test the temper of the eye to operation (Schweigger's rule). In two eyes the result of the operation is unknown.

Myotics controlled V. for 6 years in 2; for 5 years in 1; for 2 years in 2; for 18 months in 1; for 16 months in 1; for 2 months in 4; for 1 month in 3. The eyes seen respectively at the end of two months and one month of myotic treatment probably continued to hold their own for much longer periods. They were not again seen.

In 14 instances the patient was not again seen, and the result of myotic treatment cannot be recorded. In the remaining instances some other form of treatment, operative or otherwise, was used, unless the eyes were in such a condition that they were past the hope of remedial measures.

The intraocular tension was elevated in 41 eyes; is not recorded in 16 eyes, and was normal in 6 eyes.

## THE NUTRITION OF THE LENS AND ITS RELATION TO CATARACT FORMATION.

LOUIS STRICKER, M. D.,

CINCINNATI, O.

In studying *The Crystalline Lens System*, we are confronted by conditions entirely different from those regulating any other organism of the entire body. Here we find a living structure—The Lens—undergoing all the successive changes of development, progression and retrogression, devoid of the usual complicating factors—bloodvessels, nerves and lymphatics, subject to the influence of its nutritive supply, which is brought to it by the vitreous, possibly by the aqueous, both of which likewise, are devoid of these complicating factors—bloodvessels, nerves and lymphatics. The lens is also subject to the mechanical influence exerted on its shape by the Zonula Zinii. To this latter influence, the lens responds in a purely passive manner, due to the inherent elasticity of its fibre.

Subsequent to its embryonal developmental period of growth, the lens consists of closely packed lamellæ of fibres, which become more densely packed as we approach the center, thus forming the nucleus as distinguished from the cortex, the outer, younger, more succulent lamellæ. All the fibres are derived from the epithelium, which originally invested the entire interior of the capsule, but, with the completion of the 3d period of foetal development, conditions are changed; henceforth, the entire growth of the lens depends on the development of new fibres from the cells which line the anterior capsule.

These epithelial cells are the important factor of the lens, and have various functions to perform.

*First.* The excretion of the capsular substance which forms not only the covering, but aids in holding them together, and likewise acts as a dialyzing membrane.

*Second.* These cells maintain the continuous and uniform growth of the lens and preserve the intracapsular

pressure and equilibrium, which is likewise dependent on the gradual formation and shrinkage of the nucleus.

*Third.* The selective power of these cells to assimilate food for their nourishment.

*Fourth.* To act as a barrier, preventing the entrance of abnormal fluids—permitting by osmosis the interchange of indifferent fluids, those which exert no detrimental chemical action on the lens-fibres, and possess an index of refraction, consistent with a perfect transparency of the lens.

The lens is practically immersed in its nutritive supply and the fluid which has passed through the capsule by osmosis permeates all the interlamellar and interfibrillar interspaces; hence, literally, the fibres are bathed in nutritive fluid, a condition which is more perfect in the cortex than in the nucleus, where the fibres are more closely packed. It surely must be evident that since with each accommodative effort, the lens changes its shape, at the same time the fluid in the interfibrillar spaces must likewise change its relative position, and in this manner currents are set up, by means of which the fluid which has served its purpose, is forced onward and fresh fluid enters the lens, these accommodative efforts producing an effect, which may in the lens be likened to the diastole and systole of the heart. Later in life, when the nucleus has become less resilient and its lamellæ denser and the nucleus as a whole no longer gives during these accommodative efforts to the same degree that the cortex does, this inequality of resiliency leads to the formation of splits and fissures, in which the nutritive fluid stagnates and is subsequently not pressed out, thus leading to the first recognizable evidences of cataract formation, due to a changed index of refraction of this fluid in the interspaces. In consequence of neighboring fibres being deprived of a fresh nutritive fluid, these undergo degenerative changes, give up some of their contents and take up some of the abnormal fluid; thus the first cataractous changes are set up.

Many authorities have sought to set up distinct modes of entrance and exit for the nutritive fluid into the lens. Since all effete matter is carried off by the aqueous, the effete matter from the lens must likewise pass in this



direction, and is undoubtedly given off anteriorly, most authorities claiming in a circular area, bordering on the anterior pole. Since the fibres develop along the equator, and since experimental investigators have obtained the deepest reaction to chemicals along this line, it has been assumed that along this line, the nutriment gains access to the lens, and distinct paths have been pointed out, pseudo lymphatic spaces (if one may so express it) in which the fluid circulates. This line of entrance has been accepted as between the Zonular fibres, but the mode of its circulation is still a question of doubt. The *vis-a-tergo* (from behind), and the suction power in the anterior chamber, produced by the absorption along the line of the canal of Schlemm, must of necessity keep up the continuous circulation of the nutritive supply, and this is undoubtedly materially assisted by the manifold changes in the shape of the lens, induced by every accommodative effort. One form of cataract which may be looked upon as the result of this general interference with the circulation of the nutritive fluid, is the cataract which develops in the course of glaucoma.

The posterior surface of the lens has no epithelial protection, simply the homogenous lens capsule, which is considerably thinner than the anterior. In cases of choroid retinitis and retinitis pigmentosa (in which there has been disease of the choroidal vessels), we find as the result of osmosis posteriorly of a defective nutritive material, the appearance of a posterior cortical cataract, in the region which receives its nutriment directly from the vitreous.

The interchange of fluids in the lens is entirely chemical, perfectly passive, being entirely separated from the influence of bloodvessels or nerves, the only condition which would influence the condition being one of *temperature*, and electrical action.

All the varieties of cataract (except those due to congenital malformations) can be explained on a basis of chemical change, the variety of the cataract depending on the chemical constitution of the nutritive fluid, the intensity of its action and the time of life.

It has been shown that in the normal eye, the chem-

ical constitution and the index of refraction of both aqueous and vitreous are practically the same.

The chemical analysis of the aqueous obtained from patients having cataract contained more albuminous substance than the aqueous of the normal eye. Though no chemical analysis of the vitreous during the progress of cataract formation has been made, attention has been called to the fact, clinically noted, that opacities appear in the vitreous indicating a degeneration of the same.

From this, the conclusion has been drawn that some chemical constituent of the vitreous is present in either too great or abnormal a quantity, or some agent entirely foreign to normal vitreous is present, which leads either to an excessive, deficient or abnormal nutritive supply to the lens. Like conditions noted in the aqueous are in part due to an interference with the proper interchange of fluids in the lens. The albuminous increase in the aqueous being derived from the lens, *not a cause* of the cataract but rather *a result* of the same; since it has further been shown that senile cataracts contain a less amount of albuminous material than the senile non cataractous lenses taken from the same period of life. Further, that the senile cataractous lens contains considerable more water (76.23 per cent. : 69.06 per cent.) than the non-cloudy senile lens, all of these facts proving that there is a very marked difference between the cataractous and non-cataractous senile lens.

It is a well known fact that the direct contact of normal aqueous and vitreous with the lens fibres causes these to swell up and dissolve in the living eye—an ordinary observation in traumatic cataract. Hence, there must be something present in the aqueous and vitreous, which, with a perfect integrity of the lens existing, is prevented from entering the capsular sac. In all experiments ever made, by means of which the epithelial cells lining the anterior capsule were destroyed, this barrier being even partially removed, fluids inimical to the lens proper gained entrance, and, if they did not at once cause the lens to swell up (a condition which always occurs in the formation of a senile or constitutional cataract), they cause a change in the index of refraction of the cortical substance with a consequent change in the transparency of the lens, which

we designate as cataract. The entrance of a pathological fluid or constituents of *normal fluid*, which under normal conditions cannot pass through the capsule, lead to a degeneration or solution of some of the cortical lamellæ of fibres, and by osmosis some of the constituents of the lens are removed and the intracapsular pressure is reduced, and soon the various forms of pathological cells (Wedl's vesicular cells, etc.) begin to develop; further the capsular epithelial cells begin to undergo hyperplasia and produce a condition frequently noted in cataracts which have existed for a long time, viz., *capsular cataract*.

Capsular cataract may also be the result of adhesions of extra capsular tissue in close relation, or due to exudates on the capsule, which interfere with the proper nutrition of the capsular cells. But in some cases where these capsular cells have been exposed for a long time to deleterious influences, be these traumatic, or the result of long continued action of an abnormal nutritive supply, as observed in diabetes, albuminuria, or any of the dyscrasias, as cholera, anæmia, gout, these epithelial cells die at certain points and the entrance of a pathological fluid is established, with its consequent effect on the lens fibres. Occurring in intra-uterine life, such conditions may lead to a complete fluidity of the contents of the capsule, and depending on the nature of the contained fluid, may be perfectly transparent or milky, or the outer lamellæ alone may become fluidified, the central portion unimpaired simulating a cataracta morgagni. In every case which has thus far been examined microscopically the statement is made that the epithelium lining the anterior capsule was found practically destroyed, and the destruction of the epithelium is to be considered a very essential factor in the production of cataract.

As a result of the physiological retrogression of the lens and its elements, with each succeeding year, the nucleus grows larger, the cortex less, so that the nutritive supply exerts its influence on a lesser amount of substance, and when this becomes pathological, it affects only the outer layers, and the opacity never becomes so dense, and consequently, in operating, the older the individual the greater the nucleus to be extracted, which, as a rule, is *not* cataractous, owing to the density of the super-imposed

lamellæ, which the altered chemical constitution of the nutritive supply has been unable to attack. But there are exceptions to this rule, as witnessed in Von Graefe's hard or waxy cataract, and a form occurring in persons past the 40th year, in which, contrary to the general rule, a soft nucleus is found.

In the aged, just as in the young, the cortex may become perfectly fluid, without materially affecting the nucleus, which, sinking to the bottom of the sac, gives us the typical picture of a *cataracta morgagniana*.

There are conditions in which nutritive disturbances may only be active for a certain period of time, not only affecting the growth of the fibres, but at the same time affecting their transparency. Subsequently, a normal nutritive supply is again supplied, and the epithelial cells regaining their former normal condition, again produce perfectly normal fibres, which, in course of time, are applied over the affected lamellæ, and thus is explained the zonular or lamellar cataract, which, when occurring early in life and subsequently becoming more compact, may give the appearance of a central or nuclear cataract, and this condition may repeat itself at various intervals, thus giving us the picture of a double zonular cataract.

In considering hereditary cataract, in which in each succeeding generation the cataract occurs at an earlier age, it has been suggested that the cause is to be sought in a reduced viability of germinal cells, which, at the very beginning, are set aside to form the lens germ. Why these cells should have a lesser viability than others of the entire body, seems almost unanswerable, but where one stops to consider the isolated position of the lens, its distant removal from the blood supply, and the extreme sensitiveness of its epithelium to nutritive disturbances, one can conceive how an organism starting out with a reduced viability and resistance, will succumb, especially where conditions are unfavorable. Hence, we may look upon the epithelium lining the anterior capsule, as the great factor, not only in the production of the lens, but of its protection against the inroads of disease. This protecting power of the epithelial cells once annulled, the train of changes take place in a perfectly passive manner, subject entirely to the intensity of the action of the chemically altered nutritive fluid. What this chemical change consists in, must eventually be solved by the student of physiological chemistry.

**EXCESSIVE MYOPIA—INDICATIONS FOR OPERATION, AND RESULTS WHICH WE MAY REASONABLY EXPECT. REPORT OF A CASE.**

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That excessive myopia may be successfully treated by operative measures is not a new or even recent idea. A hundred years ago and more, such men as Beers, Desmonceaux and Richter called the attention of the medical profession to this means of relieving high myopia, but never practiced it themselves. A. Weber met the unqualified opposition of Donders and A. v. Graefe, when in 1858 he first reported a cure to the German Ophthalmological Society, in Heidelberg. The very next year Mooren attempted it but lost the eye through irido-cyclitis which so effectually scared the profession that it was not again attempted for thirty years. But Lister had come, and Fukala had worked in an entirely different light when, in 1889, he presented to the Wiener Medicinische Gesellschaft two cases upon which he had successfully operated.

The past ten years have contributed much to the elaboration of our knowledge concerning excessive myopia and its surgical treatment. Extravagant claims by enthusiasts and the lay press on the one side, and silly theoretical objections to a rational consideration of the subject on the other side threatened, early in the decade to bring it into disrepute. Out of all the discussion, however, have come tolerably clear indications for its performance yet with sufficiently liberal margins in each

individual case to stimulate interest and permit some speculation as to final results.

The following short history of a case here interposed may not be uninteresting. The deductions and conclusions to which the writer later arrives are not based upon the study and observation of this one case but upon a number observed by him in the clinic of v. Hippel, at Halle, Germany.

Miss F. H., of Findlay, Ohio, a school-teacher, 35 years old, consulted me in May, 1898. She had worn glasses about 15 years but had never had her eyes examined by an oculist of any repute. She consulted me in the hope of getting relief from tormenting asthenopia rather than of securing useful vision in the right eye. She thought this eye was practically blind, but said she could remember when vision was good, and that it had very gradually diminished. V. R. E. =  $\frac{1}{1\frac{1}{2}}$  or less, with — 16 sp. lens V. =  $\frac{6}{21}$ . No astigmatism. Divergence of eye =  $240^\circ$ . The vertical deviation downward measured  $10^\circ$ . The eye was markedly larger than its fellow, and in conjunction with the deviation from parallelism with the other eye caused decidedly unpleasant cosmetic impressions. By effort and when the left eye was directed far to the left the divergent right eye could be brought to and a little beyond the median line. The cornea and lens were clear, the iris normal in all its reactions but the vitreous showed large, black, numerous floating opacities. Staphyloma posticum was large and throughout its area of the fundus were isolated white flecks the remains as I judged of previous hemorrhages. Skiascopy revealed 15 D. of myopia. I advised removal of the lens, at the same time I candidly told the patient some of the dangers connected with the operation, and some threatening such eyes when nothing was done. In four weeks she returned and entered St. Anthony's hospital where, on June 22, under holocain anesthesia, I disced the lens. In the evening of the 4th day patient complained of some pain. There was circumcorneal injection and tension was plus. On the 5th day she was suffering intensely, with pain radiating over the right side of her head. She had slept none and had vomited early in the morning. Globe was injected, and of strong hardness. I at once evacuated

the anterior chamber of the swollen lenticular masses and so marked was the immediate relief that the patient went to sleep within half an hour. On the 14th day a second evacuation of the lenticular masses relieved some irritation which their presence induced. A second discision on the 18th day and a third and final evacuation of the anterior chamber of the remainder of the lens completed the work so far as the myopia was concerned. She at once said she could see better, though no accurate tests were made at this time. Tenotomy of the external and inferior recti-muscles were done, and the seventh week after discision patient came to my office where vision without glasses was 0.1, with glasses 0.3. Eye quiet, no pain or redness, and asthenopia symptoms much improved. Pupil a little irregular, in the upper outer quadrant showing a small angle where it was adherent to the lens capsule. Opacities of vitreous unmodified. Pupil clear in exact center, but a hazy veil obstructing the greater portion of it. I permitted her to go home for ten days giving her no glasses, but ordering prismatic exercises for the weak interni muscles. Even after tenotomy there was a divergence of some  $6^{\circ}$  —  $8^{\circ}$ . On her return I ordered  $+ 1.5$  sp.  $\ominus + 1$  cyl. ax 135 R. E. and secured thereby vision of  $\frac{1}{12}$ . Prismatic exercises were continued. Patient went to her home and in October resumed her school work against my most vigorous protest. In December I again saw her. By discarding the cylindrique and giving  $+ 2.5$  D sp. I could obtain vision of six-ninths ( $\frac{2}{3}$ ). This she has worn ever since. A letter dated May 30th, 1899, informs me that since closing her school she has been free from headaches though during the term she had occasional attacks.

The question when to operate is often a severe test of the surgeon's ability. Of some six cases of excessive myopia occurring in my own private practice within the past two years the above is the only one in which the indications seemed indisputable. For practical purposes the eye was blind. It had, with its enlargement and divergence, already reached the stage of deformity, which means not a little to a young, unmarried woman. The asthenopia was well nigh intolerable, and she felt compelled to earn her own livelihood by teaching. There



had been hemorrhages, and we might be justified in fearing they would occur again, with what disastrous effects no man might estimate. That it was progressive is proven not alone by her own statement that she had noted the continued diminution in the visual capacity of that eye, but as well by the floating opacities which were of somewhat recent origin. A series of pictures taken since 'girlhood' also proves its progressive character. Complete blindness from retinal detachment, or chorio-retinitic changes in the macular region-so apt to occur from the third to the fifth decade of life in myopes could almost with certainty be prognosticated, if something could not be done to stop the progress of the disease. There was but little to lose; there might be much to gain.

What are the results? She has binocular vision, and vision in the right eye is  $\frac{5}{6}$  instead of mere perception of light. Her friends now ask her which eye was operated upon, so great has been the change in her cosmetic appearance. Her asthenopia is gone, and only when she taxes her eyes and strength beyond what they should endure, does she suffer. During the past year there has been no progress in the trouble; there have been no hemorrhages, nor increase in the vitreous opacities, and even the traumatic astigmatism has disappeared.

One decade ago almost any oculist would have said never operate for excessive myopia. To-day one hardly dares take that position. The first ten years have been full of discussion, and rich in experience. All questions have not been answered nor all doubts removed, but it is difficult to see how this operation can ever again be relegated to the obsolete.

Age seems to play no role, or at least no very important role, either as an etiologic factor in the production of excessive myopia, or as a contraindication to operative measures therefor. The lens of a highly myopic eye when discised appears to behave in very much the same manner, be the patient ten years old or fifty, as it does not undergo sclerosis. Ten per cent. of v. Hippel's cases were thirty-five years old or more and three of these were over sixty years of age.

Perhaps no part of the discussion has been given



greater attention than the degree of myopia requisite to justify operative measures. Manifestly that alone cannot be the crucial indication. The comfort of the patient with correcting or partially correcting lenses; his capacity for work and self support therewith; the condition and behavior of the other eye; and above all, it seems to me, the character of the myopia—whether progressive or stationary—all these conditions must be weighed along with that of degree. But for the time being disregarding these points, it is interesting to take a large number of cases and note just what post operative refraction resulted. I have selected v. Hippel's 114 cases because of my personal acquaintance with a number of them, and because I have a detailed report with permission to use them.

Among Prof. v. Hippel's 114 cases:

3	with M. 10 D.	Post. Op. Ref. of all = H. 7D.
6	" " 12 D.	" " " " 3 = H. 2D.
		" " " " 2 = H. 4D.
		" " " " 1 = H. 5D.
3	" M. 13 D.	" " " " 1 = H. 3 "
		" " " " 2 = H. 5 "
10	" M. 14 D.	" " " " 1 = Ah. 4D.
		" " " " 1 = H. 2D.
		" " " " 5 = H. 3 "
		" " " " 1 = H. 4 "
		" " " " 2 = H. 5 "
13	" M. 15 D.	" " " " 1 = M. 1D.
		" " " " 1 = E.
		" " " " 2 = H. 1 "
		" " " " 3 = H. 2 "
		" " " " 5 = H. 3 "
		" " " " 1 = H. 6 "
17	" M. 16 D.	" " " " 1 = Ah. 4D.
		" " " " 4 = E.
		" " " " 3 = H. 1 "
		" " " " 3 = H. 2 "
		" " " " 2 = H. 3 "
		" " " " 2 = H. 4 "
		" " " " 1 = H. 5 "
		" " " " 1 = H. 7 "
4	" M. 17 D.	" " " " 1 = E.
		" " " " 1 = H. 1D.
		" " " " 1 = H. 2 "
		" " " " 1 = H. 3 "
20	" M. 18 D.	" " " " 1 = M. 2 D.
		" " " " 1 = M. 1 "
		" " " " 3 = E.

	"	"	"	"	1 = Amh.
	"	"	"	"	1 = Ah.
	"	"	"	"	7 = H. 1D.
	"	"	"	"	3 = H. 2 "
	"	"	"	"	2 = H. 3 "
	"	"	"	"	1 = H. 4 "
17 with M. 19 to 20 D.	"	"	"	"	1 = M. 3D.
	"	"	"	"	1 = M. 2 "
	"	"	"	"	2 = M. 1D.
	"	"	"	"	6 = E.
	"	"	"	"	2 = Am. 2D.
	"	"	"	"	4 = H. 1D.
	"	"	"	"	1 = H. 3D.
6 with M. 21 to 22 D	"	"	"	"	1 = M. 4D.
	"	"	"	"	1 = M. 2D.
	"	"	"	"	2 = M. 1D.
	"	"	"	"	1 = H. 2 "
	"	"	"	"	1 = H. 4 "
3 with M. 23 D.	"	"	"	"	1 = 2 M.
	"	"	"	"	1 = 3 Am.
	"	"	"	"	1 = 3 H.
1 with M. 24	"	"	"	"	1 = Am. 4.
1 with M. 25	"	"	"	"	1 = M. 2D.

Ten scattering including those with secondary cataracts and those yet under treatment.

These figures are interesting. They show that it is absolutely impossible to accurately estimate the final refractive condition of any highly myopic eye. Myopia of 10 D. in each case resulted in 7 D. of hypermetropia, which is no gain, when ones loss of accommodation is taken into consideration. Emmetropia the ideal refractive result was attained in no case under the class with M. 15 D. and in that class only once in fourteen cases. Between 16 and 20 D. of myopia, about 25 per cent. of the cases resulted in emmetropia though even in this class the range of variation was from myopia of 3 D to 7 D. of hypermetropia.

A glance at the above grouping of his cases would seem to justify v. Hippel's claim, that 12 D. should be the minimum grade operable, and only then when further indicated by functional disabilities or progressive organic changes. For some patients are more comfortable, have greater capacity, and are in less danger with myopia of 15 D. and proper correcting lenses than others with myopia of 10 or 12 D.

A word may be said here regarding the quantitative vision of a highly myopic eye. It is indeed difficult to give a standard gauge by which we may be influenced to operate upon an eye, or be deterred therefrom. Most of these eyes are amblyopic—the amblyopia exanopsia—and it is difficult to determine what the perceptive elements are capable of accomplishing under the influence of a well defined retinal image and plenty of time. In the absence of ophthalmoscopic evidences of organic changes in the fundus which preclude the possibility of these perceptive elements regaining their function, the writer would consider the question of quantitative vision to be one of somewhat minor importance, and confidently expect good results. His own case is evidence that such improvement in function is probable.

Somewhat closely associated with this feature of highly myopic eyes is the muscular imbalance. Shall we correct this before or after removal of the lens? Experience proves that considerable imbalance may disappear spontaneously after the lens is removed, evidently due to the natural tendency of the eyes to assume a position of parallelism with each other, when distinct retinal images are formed in each eye. To be sure the correction of the imbalance before operation may relieve some of the asthenopic troubles, but cannot affect to any appreciable degree the quantitative vision. If therefore this same may be accomplished after removal of the lens it seems plausible that the muscles should not be subjected to any radical procedure until after the operation. The degree of divergence will be found less in the aphakic eye, and we should take advantage of the aid which an improved retinal image lends in the correction of this defect. Where the divergence is excessive the muscular correction may and should be done earlier than where it is small in amount.

Shall we operate in the presence of disease of the fundus? In my own case there had been subretinal hemorrhages though of not very recent occurrence. It has not occurred since operating. We know it often does occur in connection with posterior staphyloma. If the operation has any kind of prophylactic influence, which some of us believe, we should expect this influence on subretinal hemorrhage. The same should hold also as

regards retinal detachment, the one sequella which perhaps more than any other has been feared. Cases are reported in which where it has occurred at periods of variable duration. Cases are reported on the other hand where it has occurred in the non-operated eye while its fellow, thus subjected to the treatment, has escaped. It is simply a question whether the excessively myopic eye is safer with its lens in place, or with it out. Theories can be spun for each side of the question, and then after awhile, in the light of added experience, it will be seen how absurd some of our theories have been. Meanwhile experience is rapidly piling up testimony in the operation's favor provided it be done under strict asepsis, and safeguarded by adequate indications. Choroiditis appears neither to affect nor to be affected by the operation. While I was in Germany I saw Prof. v. Hippel operate in the presence of recent choroiditis. I see by a later report that new patches were discovered in this very case one year later.

As in any operation one would not needlessly expose the eye to the dangers of infection so in this one every effort must be made before operating to eliminate all diseases of the conjunctiva and lachrymal apparatus. When correcting lenses are worn, or tolerated for short intervals even, these highly myopic eyes are very much better than none, and no one is justified in taking unnecessary risks with the greatly reduced function of the eyes of these unfortunate people.

What may we expect after decision of the lens of an excessively myopic eye? If the lenticular wound be not too extensive nor too deep the lens will swell up gradually and masses will slowly find their way into the anterior chamber. This may be almost filled without occasioning much if any disturbance. If the decision needle make a big rent in the anterior capsule, and be deeply thrust into the lens itself, swelling of the same may be rapid, and falling into and filling up the anterior chamber, the lenticular masses either interfere mechanically with filtration or else accumulate faster than filtration normally takes place. In this event increase of tension with all the phenomena of an acute secondary glaucoma supervenes—pain in the globe, radiating over the same half of the head,

injection of ciliary vessels, and even nausea and vomiting as in my own case. Evacuation of these masses is at once indicated, the use of myotics being of no avail. This should be done by the angular lance as used in the operation for iridectomy. The incision should be made at the sclero corneal margin, and be 6 to 8 mm. in length. Without withdrawing the lance, pressure should be made upon the posterior margin of the wound thus permitting the aqueous to escape over the inner surface of the lance carrying with it the semi-fluid opaque masses of the lens. This procedure will be effectively aided oftentimes by wiping away with a small pledget of cotton the particles of lens matter when they tend to dam up at the wound margin. The immediate result of this procedure is well nigh astounding in those cases in which glaucomatous symptoms have arisen. Pain and discomfort give way to relief, and sleeplessness and disquietude to rest and composure. The time elapsing between the first decision and evacuation of lens matter is variable even in the same individual. It may be a few days or several weeks. Probably one week is a good average. A second and a third discision may be necessary, as in the case above reported, and this as well in the aged patient as in the young. A clear pupil is seldom obtained without a secondary operation as in cataract, though it did occur in my own case. In favorable cases the period of treatment will vary from one to two months, during which time, if the organ remains quiet, the patient need not be confined to bed, except a few days succeeding each operation.

Hirschberg's rule is that if you subtract one-half of the myopia from ten the result will equal the post operative refraction. This rule will hold in about one-half of the cases only. If a margin of one diopter either way be allowed the rule will hold in fully 66 $\frac{2}{3}$  per cent. of the cases. From what has been previously said the rule will oftenest apply to that class of cases with myopia of 16 D. to 20 D. But whatever the glass necessary to correct the post operative refraction it is almost without exception that the quantitative vision thus secured is greater than it was before operating. This is due not alone to the enlarged retinal image and less dispersion of light, but also and in greater measure perhaps, to the fact that the perceptive

elements regain a lost function—or, as might be more exactly stated, develop a function heretofore undeveloped. Emmetropia with vision ranging from 0.3 to 0.6; or hypermetropia or myopia of 1 D. or 2.D with  $V = 1$  is not an uncommon result. In v. Hippel's 114 cases seven cases with  $V. = 1$  are reported and in not one of these did the refraction vary more than 3.D from normal.

But what is of greatest importance is that many of these people are brought from a state of dependency to one of self support, from darkness to light, or, as in the case reported, from pain and disfigurement, to health and comeliness. Even in those cases where vision is not *markedly* improved the patients hail with delight the *slight* improvement which is usually obtained.

## ASTIGMATISM AFTER CATARACT EXTRACTION

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The perfection attained in modern operative methods warrants the assertion that, with reasonable self control upon the part of the patient and through aseptic precautions both during the operation and the after treatment, the results of correctly performed extractions of mature, uncomplicated, senile cataract should be fairly uniform, and the patient's vision should very nearly approximate 20/20.

To the astigmatism, which so frequently results from cataract extraction, is often due our failure to obtain this perfect result. If the degree is high, even though it be regular, it is sometimes impossible by means of any glass to correct it in such a manner as to obtain full vision and, even where central vision of 20/20 is obtained by the aid of strong cylindrical lenses, such lenses are well known to have some serious disadvantages in general use, not the least of which is the necessity for great care in keeping them accurately adjusted to the one position before the eye in which good vision may be obtained.

It is extremely desirable therefore, in order in some measure to avoid operative astigmatism, that we should understand its nature and those influences which tend to produce it.

A number of valuable contributions to our knowledge of post operative astigmatism have been made from time to time and while, perhaps, nothing original may be added, it is my object in the present paper to present briefly the results of a study of a series of my own cases compared with those of others and a summary of the deductions of greatest importance to the practical operator which may be warranted by the present state of our knowledge of the subject.

It is capable of demonstration by measurements with Javal's Ophthalmometer, that an incision of such size as

is required for the extraction of cataract will generally be followed by a diminution of curvature in the meridian at right angles to the incision and in many instances, what is often lost sight of, a less marked increase in that of the opposite meridian.

The conditions which influence the production of operative astigmatism may be grouped as follows:

First. The form and location of the incision.

Second. The nature of the healing process and,

Third. The degree of tension from within or pressure from without which may influence this healing process.

An incision at right angles to the surface of the cornea would probably be an ideal one so far as astigmatism is concerned, but in an operation so complex as the extraction of cataract it is a grave error to be so far a slave to a single idea as to sacrifice general results to our theories on some one point in the operative procedure however important that point may be and, in the selection of an incision there are greater evils to be avoided than the production of astigmatism, even though a moderate degree should be permanent. Were this not the case we would probably, for the sake of avoiding astigmatism, adopt Graefe's, long since abandoned, peripheral-linear incision.

To avoid loss of vitreous, irido-cyclitis and, if performing simple extraction, prolapse of the iris is a consideration of vastly greater importance than the production of a few diopters of astigmatism but if the latter may, in some measure, be avoided by modifying our incision without sacrificing points of more serious importance it is well to do so.

The writer has found his best results follow an incision which begins in the extreme margin of the transparent corneal tissue, follows the corneal margin until within about one and one-half millimeters of the summit and then turns forward and emerges with the knife in the plane of a great circle. This incision is not so frequently followed by iris prolapse as one completed in the periphery, but whether it is always less apt to be followed by astigmatism I have not made a sufficient number of accurate measurements to determine. Indeed my results would



suggest that possibly this form of incision may be a little more prone to cause astigmatism than others.

On the nature of the healing process much depends as to the degree of the resulting astigmatism. In all cases the interposition of new tissue in the wound caused by displacement of the flap must lead to alteration of curvature, and retarded healing from restlessness on the part of the patient, undue movement of the eyes and inflammatory reaction causes swelling of the corneal tissue and consequent displacement.

Conditions within the eye which favor increase of the intra ocular contents, whether due to previously established disease or irritation accompanying the operative traumatism, continually tend to reopening of the wound and consequent increase in the astigmatism; and this brings us to the consideration of the influence exercised by the iris in causing or preventing astigmatism and the advantages or disadvantages of an iridectomy prior to or at the time of the extraction of the lens.

Here, as in the selection of the form of the corneal incision, so many other and weightier considerations must be taken into account that the question of the production of a little more or less astigmatism seems of relatively slight importance, but while it is with special reference to the causation of astigmatism that we are now considering the question, it is well to remember that whatever operative method or mode of after treatment succeeds best in preventing reopening of the corneal wound tends to prevent infection and iritic exudation in the pupillary space as well as permanent astigmatism.

It is like touching upon one's religious or political creed to open up the subject of simple or combined extraction with an ophthalmic surgeon and, if we will be entirely frank, most of us must, with the religionist and the partisan, acknowledge the existence of a shade of bigotry or prejudice which leads us to look somewhat askance upon methods which differ greatly from the one which in our hands has proven most satisfactory. Even in some of our best text books this subject is dealt with in a manner to make more strongly manifest the writers' qualifications as a partisan than as a scientist and the author's own method is often insisted upon as the only true one.

After a careful study of a long series of my own cases with their visual results I was led a short time since to make some comparisons with the results obtained by others who operate by a different method and the fact that, so far as the production of astigmatism is concerned their results were sometimes better than my own has led me of late to investigate the subject still further.

For many years, when no unusual condition has rendered such a course impracticable, it has been my practice to perform simple extraction, carefully irrigating the anterior chamber with a sterilized 3 per cent. salt solution by means of a simple pipette or Andrews' dropper. The visual results obtained by this method have been excellent and compare favorably with the statistics of other operators, but for some time I have suspected that the degree of astigmatism resulting was higher than it should be.

Prolapse of the iris may cause regular, and at times, irregular astigmatism and is undoubtedly one of the disadvantages against which we must take precautions in simple extraction but, while under favorable conditions it does occur, this has not been very frequently the case in my experience and, unless the hernia is large, the resulting vision is often excellent. I am convinced that years ago when I systematically performed an iridectomy I had at least as much trouble from prolapse of vitreous and shreds of capsule in the wound as I have had from prolapse of iris since I have adopted simple extraction.

There is, however, a tendency in many cases for the iris to become slightly incarcerated or, more frequently, pressed forward and adherent to the posterior lip of the wound over more or less of its extent. This is not infrequently found in cases with excellent vision and, so far as the safety of the eye is concerned, has not seemed to be a serious matter, even, as I have been led to believe, sometimes acting as a conservative measure. But while it is not, perhaps, a matter of positive demonstration, it is very probable that at times the corneal astigmatism which makes its appearance after simple extraction may be traced to the bulging forward of the lips of the wound owing to the fact that the adherent iris prevents free escape of aqueous, when other causes have produced undue intraocular tension.

It is claimed that an iridectomy involving the excision of only a very small portion of the pupillary margin will, in addition to facilitating the removal of cortical substance, strongly tend to prevent prolapse and adhesions of the iris to the wound by allowing the aqueous to escape when the tension increases, and whether this claim has been fully established or not, it is certainly worthy of careful consideration and a study of the tables presented below tends to convince one that the operation with a preliminary iridectomy, even though it be small, is apt for some reason to be followed by far less post-operative astigmatism.

It is possible that iridectomy prevents astigmatism by allowing the cortical lens substance to be more thoroughly removed and thus avoids such tension as might arise from irritation due to that cause; but in some cases in which I have performed simple extraction and by deliberate manipulation with repeated irrigation have cleansed the aqueous chamber so thoroughly as to see no further evidence of retained cortical substance during the healing process, I have still had astigmatism of considerable degree which was associated with adhesion of the peripheral portion of the iris to the surface of the cornea over a portion of the posterior lip of the wound.

If one might have an opportunity at frequent intervals to see the patients on whom he has operated and make a careful study of the changes which take place in each case, much might be learned that would be of great interest to the operator. In one instance I had this opportunity and the study of the variations of corneal curvature was very instructive. I quote it, not as bringing out any new point, but as a fair illustration of what we would probably find in many other cases could we see them at frequent intervals.

Paul J., age 53, a watch maker, consulted me on Sept. 1st, 1898, with senile cataract, incipient in the left, and almost mature in the right eye, which he stated had never been as good as the left.

His vision was: R. Fingers at 1 foot.

L.  $5/22.3 + 2.\text{cyl. axis } 180^\circ = 5/12.$

By January 18th, 1899, his vision in the left eye was so defective as to make it impossible for him to continue his work and he decided to enter the hospital. January 26th,

1899, I operated upon the right eye by simple extraction, irrigating the anterior chamber and obtaining an apparently good, primary result, but later I observed a small amount of cortical substance and capsule remaining in the superior, temporal quadrant of the pupillary space and, owing as it appeared to slight traumatism inflicted by the patient, a moderate amount of iritis developed which yielded gradually to atropia and hot fomentations.

The incision was of the form described above: the knife following the sclero-corneal margin until about 1-1/2-2 mm. from the summit and then turning well forward and emerging in a plane perpendicular to the surface. At the end of 18 days there remained slight injection of the bulbar conjunctiva and the wound presented a narrow cicatrical line with its inferior lip very slightly more elevated than the superior.

The following table will illustrate the variations in the corneal astigmatism, which may, I think, be taken as typical of what would be found in a large proportion of smooth, upward, corneal sections for the removal of cataract.

Case of Paul J. illustrating the changes taking place in the corneal curvature during the healing process after simple extraction of cataract.

RIGHT EYE.

8 days before op. 18th Jan., 1899.	Hor. 25.	Vert. 24.75	Astigmat'm .25 ax 120°	Vision. Fing. at 1.
* * * * *	*	* *	* * *	* * * * *
26 Jan., 1899, 1 op- erated				
13 Feb., " 18 days	27.25	22.25	5. " 180°	+9.⊖+4. axis 180°=5/12
17 " " 22 "	27.75	22.	5.75 " 180°	+9.⊖+3. " 180°=5/5
20 " " 25 "	27.25	22.	5.25 " 180°	
23 " " 28 "	26.75	22.75	4. " 180°	+8.5⊖+3. " 180°=5/7
27 " " 32 "	26.75	23.	3.75 " 10°	
3 Mar. " 36 "	26.5	23.	3.5 " 5°-10°	+8.5⊖+3. " 180°=5/5
10 " " 43 "	26.5	23.5+	3. " 5°	+9.⊖+2. " 180°=5/5
14 " " 47 "	26.25	23.5+	2.75 " 5°	+9.⊖+2.5 " 180°=5/5
22 " " 55 "	26.25	23.5	2.75 " 5°	+9.5⊖+2. " 180°=5/4
28 " " 62 "	26.	23.5	2.5 " 10°	+9.⊖+2. " 5°=5/4

From the above it will be seen that the horizontal meridian, which before the operation had a curvature equivalent to about 25.D. increased after the operation to 27.75

D., while the vertical meridian, which before the operation had about 24.75D., was reduced by flattening to 22.D. a difference of 2.75D. in each meridian.

It will further be seen that as the healing process progressed there was a constant tendency to decrease in the curvature of the horizontal and increase in the vertical meridian and at about the same rate, so that at the end of sixty-two days the horizontal meridian had a curvature of 26.D. or 1.D. more than before the operation, while the vertical had a curvature of 23.5D. or 1.25D. less than before the operation.

It will also be seen that for some four weeks after the operation there was a marked discrepancy between the astigmatism as measured by the ophthalmometer of Javal and the correcting cylindrical lens, but that as the cornea approximated its normal curvature this discrepancy disappeared and the accepted lens corresponded almost exactly with the finding of the ophthalmometer.

It will still further be noted that from the highest to the lowest degree of corneal curvature it was possible to obtain vision of 5/5, and that, while the corneal astigmatism varied from 5.75D. to 2.5D., the accepted lens, after the capsule had cleared and the cortical substance had been absorbed to such a degree as to make it possible to obtain 5/5 vision, varied only from 3.D. to 2.D.

Theoretically one would suppose that the presence of a fairly firm secondary pupillary membrane if there were in it band-like fibers, would tend to produce an increase in the corneal curvature in the direction of such bands, and I had on several occasions made an especial effort to compare the degree of astigmatism before, with that found after a secondary operation without being able to recognize any appreciable difference but, a short time ago in one instance, that of Mrs. Flora M.—which was not included in the following list because her primary vision was only 20/100,—I found positive proof that a secondary, cicatricial band may maintain a degree of corneal curvature which will disappear when the membrane is divided.

Since the following table was taken from my case records I performed a discision in this case and on dividing a fairly firm, secondary band which lay in the horizontal

meridian, I observed that as it broke there was such a separation as to indicate that it had been acting as a bow string maintaining the convexity of the corneal arch, and on measuring the corneal curvature, I found it had diminished by 1.25D.

Thirty-one days after her primary operation the ophthalmometer of Javal revealed astigmatism equal to 14.5 D. ax.15°. On March 27th, 1899, fifteen months later, Javal revealed:

R. E. 15° 29.D.  
105° 22.5 D.

L. E. No astigmatism.

---

Total astig. 6.5 D.

On March 28th, 1899, I performed a discision of R. E. and preliminary iridectomy of L. E.

April 5th, 1899, eight days after the discision,

R. E. 15° 27.75 D.	L. E. 15° 25.5 D.
105° 22.5 D.	105° 25. D.

---

Total astigmatism, 5.25 D. .5 D.

As compared with 6.5 D. before decision.

While it is only very infrequently the case that the cause of post-operative astigmatism may be found in conditions not dependent upon the form or position of the wound or the character of its healing process, this case is interesting because it illustrates the possibility of the secondary membrane producing astigmatism by maintaining the convexity of one meridian of the cornea as a bow string maintains the convexity of a bow.

In a study of the literature at my command I have found that few of those who have published the results of their cataract extractions have included in their tables a report of the refraction, or ophthalmometric observations and it has therefore not been possible to compare the degree of astigmatism as obtained by the various methods of operation and after treatment in as large a number of cases as would be desirable but the tables presented below will, I think, be of some interest.

In order to determine how far the presence of the iris is responsible for the production of post-operative astigmatism, and to what degree asymmetry of the cornea may be avoided by the performance of an iridectomy, I have made

a comparison between my own results in thirty consecutive cases and the same number reported by Dr. J. A. Lippincott and published in the Transactions of the Am. Oph. Society, in 1891. And as the proportionate degree of influence which astigmatism exerts in reducing the vision of an operated eye is difficult to estimate when associated with defects in the retina, opacities of the capsule, or other lesions of transparency, I have, for the purpose of this comparison, excluded all those cases in which the vision fell below 20/40.

Dr. Lippincott makes a small, preliminary iridectomy, generally downward, and freely irrigates the aqueous chamber with an excellent instrument which he has devised for that purpose.

In my own cases a simple extraction was performed and the aqueous chamber freely irrigated, generally with an Andrew's dropper or pipette. In a few instances I adopted a plan which suggested itself to me some months ago and which I have since found to serve an excellent purpose.

After freely dividing the anterior capsule in such a manner as to detach where it is practicable, a quadrangular portion of the pupillary area, and stirring up the anterior cortex, if that proves to be soft I irrigate thoroughly while the nucleus remains in position to protect the posterior capsule, and before the suspensory ligament has been stretched by the effort to deliver the lens. By this means it is often possible to remove not only the detached portion of the anterior capsule but a considerable portion of the soft lens substance without incurring serious risk of loss of vitreous, and in these instances after this preliminary irrigation the nucleus is easily delivered and any remaining fragments of cortex are removed by gentle pressure aided by repeated irrigation.

In the arrangement of the following tables I have, for the sake of comparison, adopted a form similar to that employed by Pflingst in: "Corneal Measurements After the Extraction of Cataract," in Knapp's Archives, Vol. 25, page 333.



A SERIES OF THIRTY CASES WITH VISION EQUAL TO 20-40 OR BETTER. TAKEN FROM THE RECORDS OF DR. C. F. CLARK.

No.	Astig. Before Op.	2 Wks. After.	2-6 Weeks.	6-12 Weeks.	3-6 Months.	6-12 Months.	1-3 Years.	Later.	Remarks.
1	Mr. T. J. A.	9 days, 2. D 30° = 20-30							
2	Mrs. W. A.	10 days, 2. D 90° = 20-30							
3	Mrs. M. A. Y.								
4	Mr. J. E.	2 wks. 3 ax. 105° = 20-30			4 mos. 1.5 ax 18° = 20-20		2 yrs. 7 mos. 3.5 ax 15° = 20-30	4 ax 5° = 20-20	2 years 7 months, Javal, 3.5 ax 15° See L. E (14). See L. E
5	Mrs. S. D.				4 mos. 2 ax 180° = 20-25				Javal, 5 ax 75°
6	Mr. G. W.				3 mos. 2 ax 180° = 20-40				
7	Mr. L. H. H.				6 mos. 2.5 ax 160° = 20-40				
8	Mr. W. L.		17 days, 3.5 ax 10° = 20-40						
9	Mrs. J. S.					8 mos. 0 = 20-30			8 months, Javal 1. ax 150°
10	Mr. J. S.	10 days 6 ax 150° = 20-75		7 wks. 1 ax 180° = 20-20					10 days, Javal 8.5 ax 150° Later 1 ax 180°
11	Mrs. W. F. E.		15 days, 6 ax 150° = 20-40				2½ yrs. 5 ax 180° = 20-20		15 days, Javal 6.5 ax 100°
12	Mr. W. T.		14 days, 3 ax 15° = 20-60				2½ yrs. 1 ax 15° = 20-20		14 days, Javal 3.5 ax 5°-10° 2½ years 1 ax 15°
13	Mrs. M. R.		16 days, 7 ax 10° = 20-36						10 days, Javal 11.75 ax 10°
14	Mrs. W. A.					11 mos. 2 ax 180° = 20-20			11 months, Javal 2. ax 20° See R. E. (2).
15	Mrs. J. W. R.	11 days, 4.5 ax 180° = 20-30		8 wks 3 ax 180° = 20-36					



16	Mrs. M. K.	12 days, 7. ax 150°					1 yr. 3 wks. 2 ax 150° - 20-20	12 days, Javal, 7.5 ax 150°. 1 yr. 3 wks. Javal, 2.5 ax 150°
17	Mr. H. A. M.						1 yr. 4 mos. 5 ax 15° - 20-20	5½ wks. Javal, 9 ax 15°. 1½ yr. Javal, 6.25 ax 15°
18	Mrs. F. W. H.					5 mos. 0 20-36		2 months, Javal 2 ax 15°
19	Mr. D. R.							2 weeks, Javal 13 ax 170°
20	Mr. S. C.	14 days, 6 ax 165° - 20-89						20 d. ys. Javal 2.75 ax 45°
21	Mrs. M. H. } .5 ax 90°	4.5-7 wks. 1. ax 30° - 20-60				3½ mos. 0. 20-20		8½ weeks, Javal 11. ax 165°
22	Mrs. E. K. } 1.25 ax 30°	19 days, 3 ax 165° - 20-20						10 mos. Javal 5.25 ax 165°
23	Mrs. J. H. H.	3 wks. 6 ax 180° - 20-60				4½ mos. 5 ax 180° - 20-36		Caps. shrunken, to be div. Prolapse of iris.
24	Mr. J. L.	32 days, 0 - 20-20						32 days, +9 - 20-60
25	Mrs. A. W.	20 days, 3 ax 180° - 20-89						4 mos. 2.5 ax 170° (5 wks. 4. ax 165° - 20-36)
26	Mrs. O. F. W.							8 wks. Javal 2.5 ax 160°
27	Mrs. M. K.							10 wks. Javal .5 ax 45°
28	Mr. W. T.	19 days, 1.5 ax 180° - 20-60						18 days 2.5 ax 170°
29	Mr. W. H. } 1. D ax 90°	18 days, 4.5 ax 170° - 20-20						18 days, 5. ax 180°. 9 wks. 2.5 ax 10° - 20-16
30	Mr. P. J. } .25 D ax 120°	18 days, 4. ax 180° - 20-48						
		7 cases - 30.5 D Average 4.35 D	13 cases - 48.5 Average 3.73 D	9 cases - 32. D Average 3.55	7 cases 13 D Average 1.85	2 cases - 2 D Average 1	5 cases - 16.5 D Average 3.3	1 case - 4 D

A SERIES OF 30 CASES, WITH VISION - 20-40 OR BETTER, TAKEN FROM THE RECORDS OF DR. J. A. LIPPINCOTT.

No.	Astlg. Bef. Op.	2 Weeks Aft.	2-6 Weeks.	6-12 Weeks.	3-6 Months.	6-12 Months.	1-3 Years.	Later.	Remarks.
1	Not rec.	2 weeks, 1 ax 180° = 20-40	5 weeks, 1 ax 180° = 20-30						
2	Mrs. M. B. A. R.		3 weeks, 7 ax 180° = 20-30	6 weeks, 3 ax 180° = 20-30	3 mos. 0 - 20-40				
3	D. R.								
4	J. R. S.		3½ wks. 1.5 ax 180° = 20-20						
5	Mrs. S. S.			7 weeks, 1 ax 90° = 20-20		8½ mos. 0. - 20-20			V. in this case slightly re- duced later.
6	J. K.								
7	Mrs. J. M.		4 weeks, 0 - 20-30						
8	J. W. H.			7 weeks, 0 - 20-20		9½ mos 0 - 20-15			
9	J. S.		5 wks. 0 = 20-30			9½ mos. 0 - 20-65			
10	Mrs. W. H.		5 weeks, 1 ax 180° = 20-30						Later (10 months after op- eration) reduced to 20-30.
11	W. H.		5 wks. 0 - 20-30						
12	Miss E. D.					10 mos. 0 - 20-40			
13	Mrs. W. C.			9½ weeks, 3 ax 20-20					
14	Mrs. J. B.				3½ mos. 2 ax 180° = 20-40				
15	Mrs. J. L.			8 weeks, 2 ax 180° = 20-30					

						Loss of vitreous, slow healing.
16 J. McA.						
17 Mrs. J. M. S.		6½ weeks, 2 ax 180° - 20-70	5 mos. 25° - 20-30			
18 Mrs. L. K.F.		8 weeks, 0 - 20-40				
19 Mrs. J. G.		10 weeks, 0 - 20-20				
20 G. W.			¾ mos. 1 ax 180° - 20-40			
21 P. D.			5 mos. 0 - 20-30			
22 G. O.			3 mos. 0 - 20-30			
23 J. C.		7¼ weeks, 1 ax 180° - 20-30				
24 G. E.		5½ wks. 1 ax 30° = 20-20				
25 Mrs. M. R.		10 weeks, 0 - 20-40				
26 U. B.		9 weeks, 0 - 20-30				
27 Mrs. I. J.	13 days, 2.5 ax 180° - 20-80	10½ wks. 2 ax 180° - 20-30				
28 S. P.						
29 P. V. J.		9 weeks, 2 ax 180° - 20-80				
30 Mrs. W. O.		9½ weeks, 0 = 20-40				
	2 cases - 2.5 D Average 17.5	10 cases - 14.5 average 1.45	6 cases - 7.5 D average 1.25	5 cases - 3. D average 0.6		

As a summary of the above tables we have the following:

Thirty consecutive cases of simple extraction compared with thirty cases of extraction after preliminary iridectomy, excluding all those in which vision fell below 20/40.

C. F. C. J. A. L.

Simple Extraction. After Prelim. Irid.

Average degree of astigmatism at last examination	2.7 D.	0.96
No astigmatism	3 Cases.	14 Cases.
2 dioptries or more	20 "	8 "
4 " "	7 "	0 "
5 " "	5 "	0 "
Highest deg. of ast.	7 D.	3.5 D.
Average vision	20/25.36	20/31.33
20/20 "	18 Cases.	6. Cases.
20/25 "	1 "	0. "
20/30 "	4 "	14. "
20/36 "	4 "	0. "
20/40 "	3 "	10. "

A careful study of the complete list from which the above cases were drawn reveals a very slight advantage in average visual results in favor of the operation with a preliminary iridectomy but when the individual cases are studied there remains a doubt in one's mind as to its real advantage in this respect.

That a preliminary iridectomy greatly diminishes the tendency to the production of post-operative astigmatism is, I think, reasonably established by the above figures. Whether it accomplishes this, 1st, by permitting the more thorough cleansing of the aqueous chamber; 2d, by allowing the aqueous to escape through the coloboma and between the lips of the wound thus relieving temporary increase of intra-ocular tension during the healing process, as has been claimed for it by its advocates; or 3d, whether the larger pupillary opening and the cicatrization of the edges of the coloboma prevent, in a measure, the contusion and inflammatory reaction in the iris which at times retards the healing process and thus favors the displacement of the edges of the wound, may be an open question; but I am strongly of the opinion that the more

thorough cleansing and the avoidance of contusion of the iris during the delivery of the lens are the most important factors in preventing the development of astigmatism.

In order to make a fair comparison of the degree of astigmatism following the various methods of operating it is necessary to confine ourselves to a study of corresponding periods after the operation, or to choose a period so late as to be reasonably sure that no change is likely to occur. This limits us to a small number of cases for comparison but the following tables, while for this reason they are not conclusive, are of interest as they include a comparison of the results as far as astigmatism is concerned, of three instead of two operators.

A comparison of the degree of astigmatism found after operation in a series of cases recorded by A. O. Pfungst, J. A. Lippincott, and C. F. Clark:

		A. O. P.*	J. A. L.	C. F. C.
2 wks. aft. op.		46 Cases, Aver. 6.3D.	2 Cases, Aver. 1.75D	9 Cases, Aver. 4.72D
Eight cases in which astigmatism was measured 6 to 8 wks. after operation.	1	6 wks. after op. 6.3D	6 wks. after op. 4.5D	6 wks. after op. 2.5D
	2	6 " " " 7.D	6 " " " 2.D	7 " " " 2.5D
	3	6 " " " 2.25D	6 " " " 0.D	7 " " " 1.D
	4	6 " " " 2.D	6 " " " 1.D	7 " " " 4.D
	5	6 " " " 2.5D	7 " " " 1.D	7 " " " 3.D
	6	8 " " " 1.25D	8 " " " 2.D	8 " " " 2.D
	7	8 " " " 2.5D	8 " " " 0.D	8 " " " 1.D
	8	8 " " " 1.25D	8 " " " 4.D	8 " " " 4.D
		8   20.75D	8   12.5D	8   22.5D
		Average Astig. 2.59D	Average Do. 1.56D	Average Do. 2.81D
		Highest 7.D	Highest 4.5D	Highest 6.D
		Lowest 1.25D	Lowest 0	Lowest 1.D

\*These cases were taken from cases in the practice of H. Knapp, of New York

While the average degree of astigmatism in my cases was lower than that reported by Pfungst at the end of two weeks after the operation, it will be observed that at the end of six or eight weeks it was somewhat in excess, while at every period at which comparison was made Dr. Lippincott, who performs a preliminary iridectomy, had a much lower average.

We are, perhaps, not justified in drawing conclusions on so important a subject from so small a number of cases, nor from the work of so limited a number of operators, but judging by the facts at our command, it would

seem that a cataract extraction after a preliminary iridectomy is apt to be followed by far less astigmatism than a simple extraction and one would naturally draw the inference from this that an operation with a preliminary iridectomy as practiced by Dr. Lippincott was to be preferred, but it would appear that, at least in the series of cases presented above, this advantage is gained at the expense of a sacrifice in acuity of vision, as there were only six cases with vision of 20/20 among the thirty in which a preliminary iridectomy was performed as compared with eighteen among an equal number with simple extraction.

**A CASE IN WHICH BOTH EYES WERE LOST FROM  
CHOROIDAL HEMORRHAGE SUBSEQUENT  
TO THE EXTRACTION OF SENILE  
CATARACT.**

**ALBERT RUFUS BAKER, M. D.,**

**CLEVELAND, OHIO.**

**PROFESSOR OF DISEASES OF THE EYE, EAR AND THROAT, IN THE  
CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS; OCULIST  
AND AURIST TO THE CLEVELAND GENERAL, ST. ALEXIS,  
AND CITY HOSPITALS.**

Mrs. Y. age 63 years. Good general health. Mature senile cataract of both eyes; good-perception and projection in all parts of the fields, pupils reacting actively to light and accommodation; tension normal, and in every way an apparently favorable case for extraction. Entered the Cleveland General Hospital, December 5th, 1894. On the following day the right lens was extracted without iridectomy. In every way a smooth operation, excepting that one or two drops of rather fluid vitreous followed the lens. There was a round pupil, centrally located, no hemorrhage into the anterior chamber, and everything in such good condition that notwithstanding a slight loss of vitreous I gave a favorable prognosis. Dressings were removed on the third, fourth and fifth days and everything found progressing favorably; corneal wound united, anterior chamber re-established, no ciliary congestion; fingers counted readily.

Upon my visit on the morning of the sixth day, patient said she injured her eye with her hand during the night, and had passed a sleepless night with considerable pain. Upon inspection I found the anterior chamber filled with blood. Used hot applications and atropine to relieve pain, but an irido-cyclitis gradually developed with occluded pupil and loss of all perception of light. The eye became soft and after several months I enucleated the eye to relieve pain.

Unfortunately an officious student opened the eye much to my chagrin and spoiled the specimen for careful study. The retina was detached and a disorganized blood clot filled most of the vitreous chamber, so that I have no hesitation in saying that at the time of the hemorrhage into the anterior chamber there was also choroidal hemorrhage. Whether the hemorrhage was due to the injury as the patient thought, or occurred spontaneously is questionable.

On December 11th, 1895, Mrs. Y. returned to Cleveland General Hospital to have the cataract removed from the left eye. After reviewing the literature of the subject at my command, I decided to make a preliminary iridectomy and extract the lens subsequently. There was no hemorrhage following the iridectomy, no reaction, and five weeks later I made extraction. I never made a smoother, cleaner operation, a perfectly black pupil, no hemorrhage, no escape of vitreous. Directed the orderlies to leave the patient on the table for half an hour before removing to ward. A trained nurse was by her side all the time. The patient did not talk, laugh or move, but between twenty-five and thirty minutes after the dressings were applied, she screamed with pain. I was called at once and raised her head and gave her a hypodermic of morphin. I endeavored to soothe her without avail, and in a few moments repeated the hypodermic injection. The pain not being relieved, I removed the dressings and found the entire vitreous forced out of the eye. While I was doing this the ciliary bodies and retina protruded as large as the end of my finger through the gaping corneal wound. It looked as though a person had grasped the eye tightly in the hand and squeezed out all its contents. I suggested immediate enucleation but it was declined. I reapplied the bandages, and after pursuing a more or less painful course of a few weeks with little or no suppuration, a shrunken globe about the size of a hazel nut remained. I made a diagnosis at the time of choroidal hemorrhage, and yet at no time was there any hemorrhage seen; the dressings were at no time bloodstained. The fellow eye having been lost from choroidal hemorrhage and all precautions that suggested themselves having been taken to prevent its occurrence, and having talked the matter over with the patient and her friends before the second operation, they



took the matter more philosophically than I. It was several years before I could speak of the case with any degree of composure. Since the time of that operation the literature of the subject has become quite voluminous, and judging by the number of cases reported, if there is any truth in the old saw that "misery likes company," I should be quite joyful. These cases must however be of quite infrequent occurrence. This is the only case I have had in between four and five hundred extractions.

It is not an unusual occurrence to have a slight hemorrhage into the anterior chamber from the iris during the operation. I have always looked upon it as an annoying incident, but never considered it as in any way interfering with the securing of good vision. It has several times occurred to have a hemorrhage into the anterior chamber several days after cataract extraction, presumably the result of an injury, sometimes leading to sharp reaction and iritis, and in two or three cases partial, if not complete occlusion of pupil, but secondary operations have usually secured a fairly useful eye. In some cases the patients have not acknowledged an injury, but my experience has led me to think traumatism has been received either consciously or unconsciously.

I have in mind the case of Mr. P. S., an ideal old Irishman, the anterior chamber of whose eye, on the morning of the sixth day after extraction, I found filled with blood. I insisted that he must have injured it, he said he did not. The case pursued a very tedious course, and it was only after several secondary operations I secured a fairly useful eye. The patient disputed the amount of the bill and it was only after several years and threatened litigation that I collected the full amount, and then the patient confessed that he got out of bed unknown to the nurse and ran against the door, injuring the eye.

I have thought sometimes that hemorrhage into the anterior chamber occurred more frequently since we have been using cocain, and possibly that its use was a predisposing cause of choroidal hemorrhage, but a more careful reference to the literature preceding the use of cocain, inclines me to think that the latter was more frequent then than now, especially during the period of chloroform narcosis, when cases were not infrequently reported as lost

from hemorrhage, the result of vomiting. Several writers have said that we should decline to operate upon the second eye when one has been lost from choroidal hemorrhage. I should very much prefer that the other fellow should do it, but it seems like a cowardly position to hold. The use of ergot and other drugs have been suggested previous to the operation, but do not promise much, if anything. The most promising way out of the dilemma is that practiced by Valude of Paris. When I suggested the title of this paper I had the same thought in my mind; indeed, the purpose of the paper was to suggest the method of reclamation, as practiced by our forefathers. I greatly regret that the thought did not come to me earlier, and it seems strange to me now that it did not, as I had my patient under observation for a year, fearing the result of the operation all the time. But as a matter of fact it did not occur to me until many months after I had lost the second eye, but as our eminent French confrere has already put the suggestion in practice before the opportunity presented for me to do so, I will append a brief abstract of his case.

“He adopted the following procedure, recommended by Gensoul of Lyons, and modified by Desmarres, but originally derived from the Arabic and Egyptian physicians of olden times. He made a small incision in the sclerotic a few mms, outside the limbus, with a fine knife, and then introduced, through the aperture thus made, a small curette, with which he depressed the lens without risk of rupturing the capsule. The operation was easy and painless, the lens was held down in its new position for a few seconds with the instrument, and on withdrawal of the curette it showed no tendency to leave its resting place. The pupil looked quite black. After operation there never was a trace of pain, nor was there any vomiting, such as some of the older surgeons used to describe. The patient left the hospital in about eight days, having V. with +12D. = 1-3, with +15 D. she could read the newspaper; the pupil was black, there was slight tremulousness of the iris. With the ophthalmoscope could be seen a distinct cupping of the disc which was somewhat pallid, and some tortuosity of the vessels. This condition of a chronic simple glaucoma without elevation of tension, may very probably have been the cause of the inopportune hemorrhage in the other

eye. Valude saw the patient again six weeks after the operation, when the eye was still well and quiet. Although one swallow does not make a summer, still Valude's success encourages one to hope that in a case such as his, where for some reason extraction cannot be done, our resources are not exhausted, and reclinacion may give a good result which we may trust will be permanent. The recital of this eminently satisfactory case may serve to cheer a surgeon greatly when face to face with a very depressing state of affairs, and to encourage the adoption of a bold but wise endeavor."\*

I also append a short bibliography of the recent literature of the subject supplementing that of Spalding in the Archives of Ophthalmology, Vol. XXV., No. 1.

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## THE NATIONAL RECOGNITION OF EYE STRAIN REFLEXES.

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In order to estimate the proper recognition by Continental, English, and American specialists of eye-strain reflexes, only the text-books have been consulted because they represent more truly the general consensus of opinion than their forerunners, the monograph and periodical literature; of these text-books the more recent are of course those utilized for purposes of comparison. Notwithstanding the splendid work done by foreign oculists in the development of the laws of physiologic and pathologic optics and the methods of correcting defects of refraction, there are very few among them who recognize in their teachings the intimate connection of optical anomalies with the general nervous economy of the individual, or who have laid anything approaching the proper stress upon the importance of correcting these defects. Refraction forms a very minor, if it forms any part at all, of the practical work of many well-known foreign ophthalmologists who as is well-known often refer their patients to a jeweler or optician to have glasses prescribed. As a rule it is only when the patient suffers marked inconvenience from imperfect vision that glasses are worn at all. So strong is the prejudice against wearing them except for presbyopia that foreign ametropes, especially women, will suffer to the verge of invalidism and beyond it, rather than entail the conspicuousness and social ostracism which accompany the habitual wearing of spectacles.

Whatever other reasons may contribute, there is no doubt that for such a state of public opinion the oculists themselves are chiefly responsible. That so little attention is given to the subject in England, and on the Continent cannot be accounted for on the supposition that ametropia and heterophoria are less common there than here. The people of the United States are not a physically

inferior race, and it is presumable that anomalies due to defective anatomy of the eye-ball and its socket do not occur more frequently here than abroad, although the highly developed nervous system of the people and the fact that we draw more largely on our reserves than other nations, may make us more sensitive to that strain. The still dominant tendency of the American to think much more of his economic than of his social effectiveness is a fact that makes the oculists' task in this country an easier one. But notwithstanding all the advantages which the common sense of our people, shown in their greater willingness for examination and treatment, give to us, to American ophthalmologists belongs the credit for having practically and incontrovertibly demonstrated the therapeutics of spheres and cylinders and prisms in neuralgia, insomnia, neurasthenia, chorea, epileptoid diseases, insanity, sick headache, indigestion, anemia, malnutrition, blepharitis, conjunctivitis, hordeolum, and chalazion, and in the prophylaxis of choroiditis, retinal disease, glaucoma, and cataract.

The American doctor has not forgotten that medicine was an art long before it was a science, and the very prosaicalness of his attitude towards it has led to his most valuable additions to it as a science. It is the desire of the practical American to cure each of his individual patients that has been the most fruitful source of his contributions not only to therapeutics but to the discovery of the dynamics of disease and the subtler interrelations of function. When the transatlantic investigator has, or thinks he has, found the cause of the disease or defect under consideration, and there is no doubt in his mind as to what is the most rational mode of treatment, his interest in his case is likely to disappear. The American doctor however is expected to account strictly for his patient, and it is the successful practitioner who still holds the place of honor among us. In the absence of the vast laboratories and other endowed institutions for research, and in the greater restrictions placed by public sentiment upon hospital experiment, the American observer is shut up very often to the study of clinical facts appearing in the course of a conservative treatment. That this field may be made most fruitful has

nowhere been shown more clearly than by the ophthalmologists of this country.

Max Knies in his work the "Relation of Diseases of the Eye to General Diseases," shows how utterly a foreigner can overlook what to us are the most patent and important facts in ophthalmology on account of their relation to the general health and well-being of millions of civilized people. In this book from cover to cover, believe it who can, there are but two slighting references to the effect of ocular conditions on general conditions although from the order of the title this would naturally be the first and chief subject considered. There is a chapter on the effect of digestive disorders on the circulation, nutrition and innervation of the eye, and not one word on the effect of abnormalities of refraction, accommodation and convergence, on the functions of the stomach. The condition of the eye in anemia is most carefully described, but the effect of eye-strain on nutrition is not touched upon. The major part of the volume is devoted to the consideration of the effects of various diseases of the nervous system upon the eye as an anatomic and mechanic entity, but the nervous irritation and exhaustion due to imperfections in this mechanism, and which are the beginning and in many cases the sole cause of the functional and even organic lesions described, are, with the one exception above noted, not so much as mentioned. Neither in his "*Grundriss der Augenheilkunde*" is there any mention of reflexes.

Even the careful and explicit Fuchs, whose work is a sort of sacred scripture among us, barely touches upon the great subject of eye-strain consequences. In the edition just published the relation of hyperopia to glaucoma is mentioned, but cataract as a result of eye-strain is not so much as thought of; neither are congestive disturbances of the retina and choroid. Even blepharitis, styas, and chalazions are relegated to an endless medical and surgical treatment. Under hyperemia of the conjunctiva hyperopia and astigmatism have a passing notice, but when giving the symptoms of the latter the conspicuous silence as to all reflex neuroses other than headache, which is vouchsafed passing mention, marks the point where American as against German observation and investigation becomes revolutionary in its importance.



Fick puts Schoen's theories of eye-strain as a cause of cataract and glaucoma, with refraction as the prophylactic treatment, in diamond type, with a half apology for mentioning them at all. The only disease of the lids in which it may act as a predisposing factor is dry catarrh of the conjunctiva, of the eye itself, hyperemia of the retina. The only neurosis named is headache, and in the prophylaxis of myopia the correction of astigmatism or hyperopia is not mentioned although the edition was published in '96.

Vossius and even Stilling and Hershing, as late as 1897, know nothing about reflexes. Ohlemann merely mentions headache and nausea in connection with asthenopia, and refraction in the treatment of hyperemia of the lids and conjunctiva, but goes no further.

The most advanced observer amongst the Germans is Schoen who in his "*Die Funktionskrankheiten des Auges*" published in 1893, alludes to nervous disturbances such as sleeplessness, dizziness, headache, migraine, nervousness, etc., from anomalies of accommodation, as well as local symptoms and lid trouble, and what is more remarkable, he notes the part played by errors of refraction in the etiology of cataract and glaucoma; but his theories seem to have made no impression whatever on his countrymen, since Fick's textbook is the only one which so much as even mentions him.

Among Frenchmen Nimier and Despagne in 1894, allude to Martin's view that astigmatism may cause keratitis, conjunctivitis, blenorrhea of the lacrimal sac, blepharospasm, blepharitis, chalazion, lacrimation, ordinary and ophthalmic migraine. And they seem to assent to the opinion of Javal that while Martin's views are extreme, the correction of eye-strain may cause the disappearance as if by magic in a certain number of cases, of symptoms of migraine, persistent conjunctivitis, and blepharitis. The whole book however is entirely dominated by the French mathematical and objective cast of mind.

Panas in his two volumes published the same year, does not refer to eye-strain reflexes of any sort. Landolt and De Wecker mention headache and migraine, but their four volumes contain no allusion to any other manifestations of eye-strain. In a recent little volume on "Ophthalmological Therapeutics" by Landolt and Gygax, refraction is ad



vised for scotoma scintillans and blepharospasm, but is not mentioned in other diseases. Why insomnia is given a place at all is one of the mysteries of the book since the treatment recommended is entirely systemic.

Progress in this particular field seems to travel with the sun. When we reach England we find that a few of its teachers are beginning to wake up to the possibilities of the eye-strain factor in the production of disease, but most of her ophthalmologists are still groping in a very dim twilight. Jessop, MacNamara, and Hartridge have caught some rays of the sunrise in the West. Jessop lays stress on refractive error as a cause of catharrhal and phlyctenular conjunctivitis, blepharospasm, blepharitis, styes, and even as a predisposing cause of glaucoma, and he does not forget to mention neuralgia and migraine under hyperopia and astigmatism. Mac Namara also remarks on the possible relation of eye-strain to glaucoma, and mentions in addition hyperemia of the retina and optic disc; and Hartridge has the distinction of noting that dyspepsia, palpitation, vomiting, and insomnia, may be classed as asthenopic symptoms, and in some cases may be so severe as to lead to the diagnosis of brain disease. In speaking of inflammatory affections of the eye and its adnexa, he says that it cannot be too forcibly insisted on that in all ophthalmic cases except those of an acute character, the refraction should be taken and recorded as a matter of routine, since complaints which prove very intractable are often easily and quickly cured when the proper glasses have been prescribed.

Swanzy will not even admit that blepharitis is caused by accommodative strain. Hyperemia of the conjunctiva is absolutely all that he concedes. Nettleship, strange to say, while ignoring its place in the production of most inflammatory troubles, recognizes the part it plays in the etiology of glaucoma, but he mentions no neurosis but headache. Juler mentions lid-troubles and hyperemia of the disc, also headache. Berry announces that it is very unlikely that hyperopia and astigmatism give rise to blepharitis though they have some influence in keeping it up as also hyperemia of the retina; but his knowledge of reflexes ends here. One mathematic formula is sweeter to him

than relief of all the sufferings of all the ametropes of all the world.

While not coming under the class of works to which we have limited ourselves we cannot refrain from passing mention of Ernest Clarke's admirable little book on "Eye-strain," showing not only familiarity with the most progressive thought on the subject, but a well balanced judgment in discriminating between the rational and sensational. We hope that his views may soon find their way into all English teaching manuals.

In crossing the Atlantic to our own continent one hardly knows how to account for the tremendous change of emphasis in the consideration of the eye-strain factor. It is much to be deplored that a few sensational muscle-cutters should have brought into disrepute the splendid work done along this line, and that "American asthenopia," as it is called abroad in consequence of the unsubstantiated claims of a few faddists, should not be thought worthy of serious consideration by our professional brethren on the other side. Such men as Norris, De Schweinitz, Risley, and Noyes, are examples of the really representative American school, and are teachers of the genuinely scientific American position,—a position which grows stronger year by year from the overwhelming accumulation of verifying facts, and which does not need to be bolstered up with case-book records compiled by the help of an over-vivid imagination. When we say that Norris represents conservative American opinion probably no one here will dispute it, but his statement that the vast majority of cases of blepharitis are due to hyperopia is the extreme of radicalism when placed beside foreign concessions on that point since Roosa first called the attention of the profession to it. We shall find in American text-books that in other inflammatory lid troubles eye-strain is given more just emphasis as also in circulatory disturbances in the eye itself, De Schweinitz even going so far as to give it as one of the causes of serous retinitis. The role of eye-strain in the production of glaucoma and cataract is more generally recognized. But it is when we come to the distant reflexes that we begin to diverge most widely from observers abroad, not simply in the stress which we lay upon muscular asthenopia, but in the intelligent apprehension

of the far reaching disturbances from accommodative asthenopia as well. We do not expect to depopulate our epileptic farms or insane asylums by tenotomies, as many of our foreign critics appear to imagine, but we are greatly lessening and expect in the future to decrease still more the number of lithemics, dyspeptics, neurasthenics, melancholics, hysterics, epileptics, choreics and mentally obtuse, by early recognition and correction of those refractive and muscular anomalies which we so clearly see and can so convincingly demonstrate are the cause of so much disordered function leading ultimately to organic lesions. The lay and professional world will sometime come to know the tremendous role played by eye-strain in weakening the whole organism and in preparing the soil for the inrooting of a hundred diseases not directly due to morbid ocular function. Eye-strain creates general morbidity, and the opportunity for special morbidity which thus has easy entrance.

There is no specialist in medicine who has as wide a field and who should have as large a clientele as the refractionist. The disease of a certain, even a large percentage of the patients now consulting the neurologist, the specialist in diseases of the alimentary tract, and the general practitioner are essentially ophthalmologic in nature. Just what effect the systematic examination of the eyes of all school children followed by scientific treatment of anomalous conditions, would have upon the death-rate and longevity record of the future, it may never be possible to put into statistical tables; but that it would raise the average of intelligence, health, and general well-being of the schools and through them of the race at large, there is no doubt in the mind of the American ophthalmologist. Cohn did a splendid work when he started his investigation of the ocular condition of the pupils of Breslau, but notwithstanding his efforts to introduce a correct hygiene he failed to make any impression on the disease which he was combatting, and it was left for our own Risley to discover the real prophylactic for the deterioration of the eye in school life in the early correction of refractive errors.

That the abstract theories of physiologic optics should occupy so large a place in foreign investigations and yet that the last thing thought of should be their practical ap-

plication in ocular therapeutics is very mysterious to the American type of mind, at least to all except that small class which, like the darkey who is still preaching that "the sun do move," have reverted to old world methods. But we are considering the type not atavism. Above all things is needed a better kind of intellect, a more rigorous scientific method, and a more self-sacrificing conscience on the part of ophthalmologists. The ophthalmometer is a valuable and useful instrument, but men whose idea of scientific accuracy, and whose professional consciences are satisfied when they have fallen on their faces in adoration and prayer before a mechanic cornea-measuring fetich, are hardly likely to see the causes or cure the results of much disease. What we ophthalmologists should above all things do is to insist still more on the American idea,—is to educate the general practitioner and the profession at large as to the importance of looking for possible eye-strain in the vast majority of the patients who come under their care. Why is it that our conferences and conventions of late are devoted almost if not quite exclusively to the consideration of surgical diseases of the eye when these form but a very small proportion of even the most skillful and popular surgeons' practice? Those who operate in the absence of all indications are of course excluded from this estimate. It is probably putting it very mildly to say that three-fourths of all surgical operations upon the eye are performed upon dispensary patients—that is, upon that class of the community in which eye-strain is the most generally neglected and is the most carelessly treated, and in which the eye consequently is the most predisposed to operative diseases. And is not that man the truest scientist and the most worthy member of a humanitarian profession who makes the prophylaxis of disease the main object of his effort and study? Instead of turning the refractive work of hospital clinics over to the inexperienced while the chief devotes his exclusive attention to surgery and the rare and exceptional in disease, would not the sum of human misery be vastly lessened could these conditions be reversed? Surgery is having its day, but the men who are doing the most enduring work are those who are laboring in the quarry that was opened up by Donders. Let America keep the preeminence she has gained along

these lines. Let us iterate and reiterate these truths concerning the magnitude and insidiousness of eye-strain influences until we have not only convinced the profession abroad, but until we have educated the laity at home as well. Let every ophthalmologist make his office a school for the enlightenment as well as a workshop for the treatment of his patients. Let us educate our healthboards, our school boards and our teachers' associations. Let us work to have systematic ocular examinations introduced into all our schools, colleges, and institutions for manual training. In other words let us not be mere scientists satisfied with a theory and content with knowledge, but public-spirited citizens and genuine humanitarians. It is through results so obtained that we shall convert all doubting transatlantic Thomases, and make them see that their negligence in action and their zeal in theory is far from being in accordance with fact and knowledge.

The results of our comparative review of the ophthalmic text-books seems to show us:—

1. The fallacy of the old proverb *Ex oriente lux*. In the first place it is the Teuton not the Latin who discovered the fundamental optic laws upon which is based the knowledge of the facts and results of eye-strain. On the other hand it is almost solely the most western, the practical American, who has developed and put to use the application of the facts which constitute their value, and which in itself amounts to a discovery of tremendous importance in applied therapeutics, and in the relief of human suffering.

2. The slowness with which medical discovery, at least in this special department, is brought into the authoritative text-books. In the Latin countries the writers of the text-books seem scarcely to have heard of reflex ocular neuroses. These books appear to be made as if by machinery and by one machine. The statements are so generalized and colorless as to bear no relation to actual treatment of disease in living patients by living physicians. They remind one of the Hegelian, "Being and non-being are identical." In Germany and England hints and allusions are seen in the text-books that the organism is a unit and that organic disease may at one time have been

preceded by functional causes, and that disease in one place may be caused by disease in a different part; but the half-scorned and half-ignored admissions have no effectiveness until we reach the wide-awake and thorough-going American. Even with us the frank and full emphasis is not so generally given as it should be.

3. But even when acknowledged in the specialists' text-books the recognition and acknowledgment of eye reflexes in the books and practices of the general physician are still farther from being admitted. We do not believe we exaggerate when we say that in America itself a million patients are to-day being treated for stomachal, nutritional, nervous and other reflex disturbances, by drugs and what not, when their diseases are due to eye-strain. Every year even in the United States, there are a hundred articles on headache which might as well have been written a hundred years ago, so far as truth and practical value are concerned.

4. The summary of the whole matter is the lesson that as physicians we must all waken up and learn the new truth; we must keep up with the knowledge of the younger men and incorporate in the text-books that which is rational and has the sanction of clinical test. We must keep our minds from ruts and habits and prejudices, must recognize that a very large proportion of disease is functional before it is organic, that it is always subtle and often far-coming, and that routine is the curse of intelligence.

## THE DIOPTRIC EYE OF DR. JACKSON.

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In the July number of these ANNALS, Dr. E. Jackson explains that his calculations about the removal of the crystalline lens do not refer to the schematic eye of Helmholtz, but to his own "dioptric eye." I must confess that, when writing my article in the same number, I did not have the original paper of Dr. Jackson at hand and relied upon a quotation, given verbatim from the doctor's article. In this quotation the first sentence reads: "In the normal emmetropic eye (having reference to the schematic eye of Helmholtz) the rays, etc., etc." Of course, I supposed from this that his calculations were based entirely upon the schematic eye of Helmholtz, and later, learned with surprise, that they did not refer to it all. I, therefore, gladly take back any utterance, which was made under this wrong assumption.

But at the same time I cannot accept the accuracy of his numbers, nor take back that of my own numbers as given in my article. There is a great difference between my numbers, as derived from the schematic eye of Helmholtz, and those calculated from Jackson's dioptric eye. It will, therefore, be necessary to say a few words about this innovation of Dr. Jackson, which he thinks "is a conception of the ocular refraction well worth having." He defines his conception as follows:

"I propose that we regard the refraction of the eye as produced by two infinitely thin lenses, the one situated at the summit of the cornea having a focal distance of 31 mm., about equal to that of the cornea (refractive power equal to about 32.25 D.), the other lens situated 6 mm. back of the summit of the cornea, having a focal distance of 50 mm. (refractive power of 20 D.). Such a scheme might be called a Dioptric Eye."

He then gives the following table, comparing certain



dimensions of his dioptric eye with those of the schematic eye.

TABLE—I.

	DIOPTRIC EYE.	HELMHOLTZ.
Focal distance of cornea.....	31.....	31.095
“ “ “ crystalline.....	50.....	50.617
Depth of crystalline behind cornea.....	6.....	———
Depth of anterior principal point of crystalline.....	———	5.726
Depth of posterior principal point of crystalline.....	———	5.924
Length of eyeball.....	22.667.....	22.819
Refracting power of cornea.....	32.26.....	32.16
“ “ “ crystalline.....	20.....	19.75
Total refractive power of eye.....	44.12.....	43.82

Now there is no doubt that this table is correct and shows very good agreement in those relations as here given. There is also no objection to his statement, that the conception of refraction by the lens at a single principal plane at 6 mm. behind the cornea does no violence to the facts as the two principal points of the crystalline really lie within one-fifth of a millimeter. It is further evident that for parallel rays of the outer world the refractive power of cornea and whole eye is about the same as in the standard schematic eye. But that seems to be about all that can be claimed for it. For calculating the size of the retinal images of the human eye, for finding the position of the images behind the emmetropic retina of objects nearer than infinity, for measuring the size of diffusion circles or for showing the exact effect of glasses on the retinal images in axial ametropia, in short for all the main purposes, the schematic eye can be used for, we cannot employ this dioptric eye. Even the effect of the removal of the crystalline cannot be demonstrated by it correctly; though Dr. Jackson says that “the value of this conception of the dioptric eye will appear as we work out the actual change produced in different cases by removal of the second refractive element, the crystalline.” (loc. cit. p. 359.)

The reason why Jackson's dioptric eye cannot give accurate results will be seen at once after we have compared the other important dimensions of the schematic and the



dioptric eye. For that purpose we give here a table comparing the most important distances. The minus sign in the third column ( $-2.48$ ) indicates that the respective points lie so much in front of, instead of, behind the cornea. In the fourth column the differences are given, the positive numbers showing how much larger, and the negative ones indicating how much smaller the dimensions of the dioptric eye are than the corresponding ones of the schematic eye. A slight deviation in the decimals only of my own numbers from those given in my former article is due to the fact that there  $7.8$  was taken as the corneal radius, while here the exact value of Helmholtz,  $7.829$  has been used.

TABLE—II.

	SCHEMATIC EYE-HELMHOLTZ.	DIOPTRIC EYE-JACKSON.	DIFFERENCE.
1. Anterior focal distance of cornea....	23.266mm.....	31.00mm.....	+7.734mm.
2. Posterior focal distance of cornea....	31.095.....	31.00.....	—0.095
3. Focal distance of crystalline.....	50.617.....	50.00.....	—0.617
4. Length of eyeball.	22.819.....	22.667.....	—0.152
5. Total refraction of eye.....	43.82 D.....	44.12 D.....	+0.3 D
6. Distance of anterior focal point of eye in front of cornea.....	13.745.....	23.147.....	+9.402
7. Distance of posterior focal point of eye behind cornea.	22.819.....	22.667.....	—0.152
8. Distance of first principal point of eye behind cornea.	1.753.....	—2.48.....	—4.233
9. Distance of second principal point of eye behind cornea.	2.106.....	2.00.....	—0.106
10. Distance of first nodal point of eye behind cornea.....	6.968.....	—2.48.....	—9.448
11. Distance of second nodal point of eye behind cornea.....	7.321.....	2.00.....	—5.321

12. Distance of second nodal point of eye from retina..... 15.498.....20.667.....+5.169
13. Strength of lens, 14mm. in front of cornea, that corrects the eye, formerly emmetropic and now aphakic..+12.79D.....+10.2D.....-2.59D
14. Strength of lens, 14mm. in front of cornea, which corrects an eye of such an axial myopia, that after removal of the crystalline, it becomes emmetropic.....-25.952D.....-18.00D.....-7.952D

Table II shows that there is by no means that close agreement between the two eyes which would be suggested by Table I. This demonstrated by points 1, 6, 8, 10, 11, 12, 13 and 14. The main difficulty arises from the anterior focal distance of the eye  $F_1$ , which is more than 5mm. larger in the dioptric than in the schematic eye. This distance enters into the calculation of the myopia of an eye with an axis 31mm. long, according to the old formula:

$$\frac{F_1}{x} + \frac{F_2}{28.989} = 1.$$

This explains the great discrepancy sub 14. The second difficulty arises from the fact that in the aphakic dioptric eye both anterior and posterior focal distances are alike (31mm.) whilst in the schematic eye the posterior  $F_2$  only equals about 31mm. and the anterior one  $F_1$  is 23.266mm. This enters into the calculation sub 13 by the formula:

$$\frac{F_1}{x} + \frac{F_2}{22.819} = 1.$$

Thus the discrepancy sub 13 is explained. The dioptric eye furthermore gives retinal images and diffusion circles much too large, because the second nodal point lies more than 5mm. farther away from the retina in the dioptric than in the schematic eye. It would seem, therefore, that the dioptric eye cannot replace the schematic eye, nor can it compare with it in accuracy.

With regard to Dr. Jackson's statement that my figures even contradict the assumption of post-operative shortening, and would indicate slight post-operative lengthening of the eyeball, I must say that I quite agree with him. I called attention to this probable elongation when speaking of the removal of the crystalline from the emmetropic eye (p. 355); but carried away, as it were, by the opinion of Hippel and others, I contradicted my own numbers when referring to the removal of the crystalline in high myopia. But of course the reasoning is quite conclusive. An axial myopia, corrected by  $-18$ . D. at 14mm. in front of the cornea, indicates in the schematic eye an axis of 28.57mm. But as the removal of the crystalline puts the second focal point of the aphakic eye at 31.095mm., it is evident that the eye after the operation must have elongated from 28.57 to 31.095, i. e., by 2.525mm. in order to become emmetropic in the state of aphakia. If, therefore, we assume that no other changes, like flattening of the cornea, etc., occur in the eye by the removal of the crystalline, then an elongation of the globe is the inevitable conclusion. This of course presupposes also that the constants found by Helmholtz are rigidly correct for every eye, which by the researches of Reuss and others we are not justified in doing. However that may be, we have no right to prefer the dioptric to the schematic eye, or even to regard them both as of the same order, because in this or that instance the results of calculation on the former agreed better with clinical experience than with the number derived from the schematic eye. This better agreement can occur only by accident or rather can be only apparent, because other new factors have entered the problem after the operation and happen to be of such a nature, that the defective calculations from the dioptric eye more nearly approach the clinical numbers. In themselves, the numbers derived from Jackson's dioptric eye cannot claim great accuracy as in this eye the anterior and posterior focal distances are alike, while they ought to differ by more than 5 millimeters.

## MISAPPREHENSIONS REGARDING THE DIOPTRIC EYE, AND ITS USES.

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In explanation of his first "wrong assumption," Dr. Weiland quotes again the passage: "In the normal emmetropic eye (having reference to the schematic eye of Helmholtz) the rays," etc.; and in a foot-note (p. 357 of the July ANNALS) the Editor says: "This passage was quoted verbatim from Dr. Jackson's article." Now it should be clearly understood that the words "having reference to the schematic eye of Helmholtz" do not occur in my article (*Ophthalmic Record*, Feb. 1898, see p. 60). Neither do any other words of similar import. Nor did Dr. Würdemann use any such expression as a part of his quotation from my article. To show the accuracy with which the dioptric eye represented (within the field of its usefulness) the average human eye, I placed its essential dimensions in comparison with those accepted by Helmholtz, but I made no statement that the one was based on the other.

Dr. Weiland points out that "for all the main purposes, the schematic eye can be used for, we cannot employ this dioptric eye;" and that "we have no right to prefer the dioptric to the schematic eye, or even to regard them both as of the same order." In this I quite agree with him. For all the main purposes a cataract knife can be used for, we cannot employ a trial lens; and we have no right to prefer a corneal loupe to an ophthalmoscope, or even to regard them both as of the same order.

Criticism based on misapprehension is valueless, and Dr. Weiland criticizes the dioptric eye as if it had been proposed as a substitute for the schematic eye—to serve the same purposes, and to be used in the same way. I did not so propose it, I never thought of it as filling the place of the schematic eye; and do not see what I have written of it to imply such a thought.

A diagram may be far less complete and far less accurate than a photograph; and yet it may be "well worth having." One diagram may be simple and crude; and yet, for a particular purpose, more useful than another that is more elaborate and complete. The dioptric eye is a simple and crude diagrammatic conception of the ocular refraction. The schematic eye is a more elaborate and complete (but still diagrammatic) conception of the same thing. Still for the only purpose for which I have suggested its use, for illustrating the refractive effect of removal of the crystalline lens, the dioptric eye gives a help that the schematic eye does not afford.

The essence of the conception of the dioptric eye is that of two separate lenses: and the absurdity of violating its essential idea by working out for it a single set of cardinal points, and values, and erecting it into a caricature of the schematic eye is rather grotesque. Possibly Dr. Weiland thinks it is beneath the dignity of science to admit a conception of the ocular refraction that does not require a mastery of geometrical optics to use it. I do not. I heartily sympathize with the feeling expressed by Donders regarding the extreme simplicity of the reduced eye, when he wrote: "To this I attach great importance, because our ideas gain so very much in clearness."

Perhaps it is worth while to remark that the dioptric eye is not offered as a substitute for the reduced eye. The dioptric eye is a simple way, but not with minute accuracy, separates the effect of crystalline lens refraction from that of corneal refraction; so that when the influence of the former is removed from the eye we can readily estimate the approximate refractive result. It is a conception in terms of refractive power and focal distance, such as the practical ophthalmologist is accustomed to. After removal of the lens factor, one naturally uses the conception of refraction at a single surface which is the basis of the reduced eye; as I did in my first article (*Oph. Rec.*, 1898, p. 61), in calculating the size of the retinal images.

The need of some such conception as the dioptric eye is strikingly illustrated in the literature of the subject, as I have pointed out in my former articles. Donders and Landolt were grossly in error as to the optical effect of removal of the crystalline lens in high myopia; and scores

of prominent ophthalmologists after careful thought on the subject express surprise at the great change produced by the operation, when the change was really not greater than should have been expected; and according to Weiland's calculation was really much less. Such an error could only have become current among careful students through constantly thinking of the eye as a single optical system.

Furthermore, in every case of high myopia the probable optical effect of removal of the crystalline lens should be worked out before deciding that it is or is not a proper case for operation. Those who have mastered the formulas of the schematic eye, and prefer them, can do this by their aid. But those who cannot claim such a mastery of theoretic optics, or who wish to solve the problem quickly by figures that can be carried in the head, can do it with greater probability of correctness with the dioptric eye. The possible errors in the values commonly given to the schematic eye, I will not now discuss. But the 20D. of myopia which experience seems to show is the average amount corrected by removal of the crystalline lens, is nearer to the 18 D. indicated by the dioptric eye than to the 26 D. (25.952) of Dr. Weiland's calculation.

# THE USE OF COCAIN IN MEASURING THE AMOUNT OF HETEROPHORIA.\*

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## PRELIMINARY NOTE.

In attempting to determine the degree of heterophoria we are confronted by certain difficulties, the principal one being the tendency of the double images to coalesce, so that either a portion or the whole of the muscular defect is masked. In the article by Stevens,† in the Norris and Oliver System of Diseases of the Eye, he refers to this obstacle and says that “in all examinations relating to the equilibrium of the eye-muscles the fact that the element of voluntary effort on the part of the person examined can rarely be eliminated is not to be underrated.” Further on‡ he states that if prisms of certain strength are employed, diplopia may be induced; and on the theory that, single vision being impossible, the voluntary effort to adjust the eyes will be withdrawn, it is assumed that the visual lines will take the direction which would be given by the minimum nervous impulse acting upon the eye muscles. “This assumption is true only in a measure, and is often without foundation in fact, as it is frequently impracticable for the individual to permit the eye muscles to become entirely passive. Notwithstanding the imperfections of this theory, we possess no method of investi-

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\*Applicazione della cocaina per determinare i'l grado dell' Eteroforia.

†G. T. Stevens. The principals of and the methods for the estimation of the balance of the extra-ocular muscles. Vol. II, page 170.

‡Loco. cit., p. 174.

gation in heterophoria so available as the artificial induction of diplopia." There is, however, another consideration. In heterophoria the muscle or groups of muscles that are continually obliged to exert themselves in a direction opposite to that which the eye has a tendency to deviate are obliged to make continuous efforts far greater than when the condition is orthophoric. Moreover, owing to the fact that in muscular anomalies an excessive amount of effort is constantly put forth by the stronger muscle or muscles, it is difficult to estimate the physiological force resident in these. For the perfect estimation of heterophoria it is consequently necessary to eliminate this impulse to fuse the doubled images of the eyes under examination.

No one, as far as we know, has so far discovered a method of overcoming the difficulties that chiefly stand in the way of rendering manifest the total amount of heterophoria.

Toward the end of 1885, when cocain had just been introduced, one of us (Prof. Guaita) published the following report of the action of cocain on the ocular muscles: "Dr. Sighicelli in a prize essay giving the results of work in the laboratory of Prof. Albertoni, in Bologna, claims that cocain produces a complete paralysis of the motor muscles of the eyeball and supports this claim by experiments on the lower animals. I have carefully observed the motility of the cocainized globe and am convinced that ordinary doses of cocain retard, although they do not entirely abolish, the excursions of the eye. Patients under the influence of cocain do not readily turn the eye in the direction indicated and this condition lasts for a short time. While their gaze is fixed upon the end of the finger they are able to follow it when the latter is slowly moved to and fro but they are not able to do so when the movements are rapid.

I have not succeeded in producing complete immobility by instilling two drops of a 3 per cent. solution into the eye every two minutes for a quarter of an hour nor by using it every two hours, for therapeutic purposes, for several days. This effect of cocain upon the eye is not a true paralysis but a state of *atony* a relaxation of the muscles. Consequently I consider that the incomplete or



lazy excursions of the globe are merely results of this atonic condition. The muscles are, one may say, fatigued or enervated; although they are still under the control of the will they exhibit an indisposition to contract. So far as their *power* is concerned it still exists.

I do not wish to call in question the experiments of Sighicelli. It may be that in experimenting upon the lower animals cocain produces a complete paralysis but it does not do so in human beings when used in a solution as strong and for as long a time as I would feel justified in employing it in my clinic.

Weber has observed that under the action of cocain adductive power increases while that of abduction and vertical fusion remains as before, or, it may be, diminishes. I have not been able to confirm this statement except in so far as I have observed it to produce an atonic condition of all of the muscles. The recti interni in their efforts to overcome the inertia produced by the cocain and to preserve their proper relations with the accommodation readily overpower the impassive external muscles and thus the power of adduction may seem to be increased." In an article by Dr. Saltini the author has demonstrated by exact measurement that the field of fixation is not restricted by the action of cocain, a fact that has already been related in the article of Prof. Guaita just referred to and which we have again confirmed in cases 2, 3, 4, 5 and 6 and 15 of this paper.

Having established these facts we now approach the question whether cocain is capable of developing the latent heterophoria.

For the purpose of settling this question we determined the state of the refraction and measured the field of fixation before and after the use of cocain. The test of the equilibrium of the extrinsic ocular muscles was made with Ostwalt's phorometer at 5 meters distance before the cocain was instilled, 5 minutes after a single instillation of a 5 per cent. solution of the muriate, 5 minutes after a second instillation and, finally, 5 minutes after a third instillation. In some subjects, moreover, we measured the projection of the eye before and after the application of cocain so as to exclude the possibility of producing an exophthalmus (Königstein) that might interfere with the movements of the eye. For this purpose we employed Antonelli's ophthalmostatometer attached to a Javal-Schiötz ophthalmometer. In no instance did we find the slightest difference in the projection of the eyes examined as above stated, either before or after the application of cocain.

The results are as follows:

Number.	Visual Acuity.	Refraction Before Paralysis of Accommodation.	Refraction After Paralysis of Accommodation.	Muscular Condition Before Instilling Cocain.	Muscular Condition Five Minutes After the Third Instillation of Cocain.	Field of Fixation After the Instillation of Cocain.
1	5-5	E.	—	Orthophoria.	Orthophoria,	—
2	5-5	M. — 0.75 D.	—	Esophoria $\frac{1}{2}^{\circ}$ Left hyperphoria $\frac{1}{2}^{\circ}$	Esophoria $2^{\circ}$ Left hyperphoria $\frac{1}{2}^{\circ}$	Unchanged
3	5-5	M. — 1.75 D.	—	Orthophoria	Orthophoria	Unchanged
4	5-5	E.	—	Esophoria $1^{\circ} - 2^{\circ}$	Esophoria $2\frac{1}{2}^{\circ} - 3\frac{1}{2}^{\circ}$ (1)	Unchanged
5	5-5	Hm. + 0.75 D.	—	Esophoria $\frac{1}{2}^{\circ}$	Esophoria $1\frac{1}{2}^{\circ}$	Unchanged
	5-5	—	H. D. + 3 D.	Esophoria $2^{\circ}$	Esophoria $2\frac{1}{2}^{\circ}$	Unchanged
6	5-10	Hm. + 3 D.	Orthophoria with refractive correction	Orthophoria	Orthophoria	Unchanged
	5-7.50	—	—	Orthophoria		—
7	5-7.50	M — 10 D.	—	Orthophoria	Orthophoria	—
8	5-5	Hm. + 0.5 D.	—	Exophoria $\frac{1}{2}^{\circ}$	Exophoria $1\frac{1}{2}^{\circ}$	—
9	5-5	Hm. + 1 D.	—	Esophoria $\frac{1}{2}^{\circ}$	Esophoria $\frac{1}{2}^{\circ}$	—
	5-5	—	H. + 2 D.	Esophoria $\frac{1}{2}^{\circ}$	Esophoria $\frac{1}{2}^{\circ}$	—
10	5-7.50	Both eyes with correction.	—	Esophoria $\frac{1}{2}^{\circ}$	Esophoria $2^{\circ}$	—
	5-5		Both eyes with refractive error corrected	Esophoria $2\frac{1}{2}^{\circ}$	Esophoria $4^{\circ}$	—
11	5-15		—	Orthophoria with a tendency to esophoria	Esophoria $\frac{1}{2}^{\circ} - \frac{3}{4}^{\circ}$ (1)	—
	5-15	—	With correction.	Esophoria $1^{\circ}$	Esophoria $3\frac{1}{2}^{\circ} - 3\frac{3}{4}^{\circ}$ (1)	—
12	5-10	—	O. D. Merid: vert: H + F D — Merid: hour Ht + 5 D. O. S. Merid: vert: Ht + 5.5 D. Merid: hour: Ht + 5 D.	Esophoria $3^{\circ} - 4^{\circ}$	Esophoria $5\frac{1}{2}^{\circ} - 6^{\circ}$ (1)	—
				Esophoria $3^{\circ} - 4^{\circ}$	Esophoria $5\frac{1}{2}^{\circ} - 6^{\circ} - (1)$	—
13	5-10	Hm. + 1.5 D.	—	Esophoria $1\frac{1}{4}^{\circ} - 1\frac{1}{2}^{\circ}$ (1)	Esophoria $2\frac{1}{2}^{\circ}$	—
14	O. D. 5-7.50 O. S. 5-30	—	—	Esophoria $1\frac{1}{2}^{\circ} - 2^{\circ}$	Esophoria $1\frac{1}{2}^{\circ} - 2^{\circ}$ (1)	—
	O. D. 5-7.50 O. S. 5-30	—	Ht + 3 D	Esophoria $3^{\circ}$	Esophoria $4^{\circ}$	—
		—	Irregular As.			
15	5-5	Hm + 0.5 D.	—	Esophoria $2\frac{1}{2}^{\circ}$	Esophoria $3\frac{1}{2}^{\circ}$	Unchanged

(1) The smaller figures represent the amount of the esophoria shown when the patient first regards the fixed point of the ophthalmometer; the larger ones that subsequently developed.

## 542 USE OF COCAIN IN MEASURING AMOUNT OF HETEROPHORIA.

The above table gives the results so far obtained by our investigations and we may conclude that one of the actions of cocain upon the eye is to develop the full degree of heterophoria and even in cases of apparent orthophoria (as in case 11) to render manifest the latent heterophoria.

How does this agent accomplish such results? As yet we are not in a position to do more than state the facts, awaiting further observations and experiments to enable us to give a satisfactory answer to the question.

ABSTRACTS FROM CURRENT AMERICAN AND  
ENGLISH OPHTHALMOLOGICAL  
LITERATURE.

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QUARTER ENDING SEPTEMBER 30, 1899.

**Elastic Tissue of the Eye.**

An interesting paper appears in the Ophthalmic Hospital Report, by M. Treacher Collins, on the subject of Elastic Tissue of the Eyeball as shown by Section Stained with Acid Orcein. The method was introduced for demonstrating the elastic tissue in the skin.

In sections of the eye the tissues of which it is composed are of such varying density that they have to be treated in different ways for the elastic tissue to be shown in all parts. The length of time which suffices for staining elastic fibres in a soft tissue like the skin is not sufficient to show them in such tough tissue as the cornea and sclerotic. The length of time which is most suitable for the sclerotic and cornea is too long for the uveal tract. If the elastic fibres of the former are well shown, the latter will be much overstained, and if the elastic tissue in the latter is just right, that in the former is hardly picked out at all.

It does not, therefore, seem possible by this method to get one section of the eye showing the elastic tissue in all parts well stained.

In the cornea, Descemet's membrane stains much deeper than any other part, and in sections which have been allowed to soak for some considerable time (24 hours), it can be made to stand out a reddish-brown color, the substantia propria remaining a dull pink.

Bowman's membrane stains precisely the same color as

the substantia propria, so that this method of staining adds additional evidence to that which has been previously brought forward as to the difference in character between Bowman's and Descemet's membranes, and as to the similarity in character of Bowman's membrane and the substantia propria.

It further emphasizes the inappropriateness of the term anterior elastic lamina, as applied to Bowman's membrane.

The fibres of the ligamentum pectinatum, into which Descemet's membrane divides up, stain deeply with the acid orcein like Descemet's membrane itself. Its outermost fibres which pass into the sclerotic can be traced a long distance backward, further than would be expected from other methods of staining, some way beyond the termination of the space of Fontana. As they proceed backward they expand, so as to extend ultimately through about half the width of the sclerotic, having between them bundles of white fibrous tissue, equatorially and meridionally arranged.

This method of staining picks out in the sclerotic a number of delicate elastic fibres, finer than those usually met with in the skin. In sections these are seen cut in various directions, those cut transversely appearing as little dark red dots. Those cut longitudinally for the most part run parallel with the bundles of white fibrous tissue, and have a wavy course.

The outer layers of the sclerotic contain more elastic fibres than the inner, and they are more numerous posteriorly than anteriorly. Around the entrance of the optic nerve there is quite a dense plexus of them.

The lamina cribrosa is largely composed of elastic fibres, which extend across the nerve fibres from the plexus in the sclerotic on each side. From the lamina cribrosa a delicate net work of elastic fibres extends backward, around the central blood vessels of the optic nerve.

In both the pial and dural sheaths of the optic nerve there are numerous elastic fibres. In the former they are like those in the sclerotic, fine and delicate, but run a more tortuous course. In the dural sheath the elastic fibres are thicker than those in the sclerotic, but have the same

wavy character, and run parallel to the bundles of white fibrous tissue.

In the tendons of the recti muscles where they are inserted into the sclerotic, thick elastic fibres are deeply stained by the acid orcein, they are especially numerous in the sheath around the muscles.

This arrangement of elastic fibres in the sclerotic which I have described, corresponds, I find, very closely with what was demonstrated by Professor Sattler, at the 25th Ophthalmological Congress, at Heidelberg, in 1896. He employed Spalteholz's method of staining, which shows up the elastic fibres black against a yellow background.

In the ocular conjunctiva many stout elastic fibres are seen lying in the tissue, between the epithelium and the sclerotic. So also are elastic fibres found in the membrane of Bruch, the capsule of the lens and the suspending ligament.

#### **Sarcoma of the Uveal Tract.**

DEVEREUX, M. (*Ophthalmic Hospital Reports*, May, 1899.) A report of 58 cases of sarcoma of the uveal tract. This paper is a sequel to one published in the same reports for December, 1891, by Lawson and Collins. The 103 cases published by these later authors have been as far as possible followed up and in this way some very reliable results have been obtained.

Of the 103 cases but 6 are known to be now alive and these have survived since the operation a variable length of time from  $8\frac{1}{2}$  to 17 years.

Twelve are known to have died during the interval and if we add these 12 fatal cases to the list of 40 previously published, we find that 52 cases died out of 58 cases traced. Of these, 34 died of recurrent disease, giving a percentage of 58.62, this being a good deal larger than was found seven years ago, when it was 32.9 per cent.

Of the 58 cases not previously reported, there were 24 males, 31 females and 3 in which the sex was unknown. This gives a percentage of 41.38 males and 53.45 females, and 5.17 unknown.

The higher proportion of females is unusual.

The average age of the 52 known cases is 54.63. The

youngest patient in this list was a man aged 28 years, No. 48, and the oldest a woman aged 74, No. 26.

The tension of the eyes is affected as particularly interesting as so much misconception exists on this point in the minds of many who suppose the tension to be always increased when growth is present. It will be seen from the following table that those cases in which the ciliary body is affected have far lower tension as a whole than when this part only is involved.

The following is a summary of the table on tension:

Tumors of choroid.			Tumors of ciliary body.	
	Actual number.	Percentage.	Actual number.	Percentage.
Increased tension.....	22	66·66	5	25·00
Normal tension.....	10	30·30	10	50·00
Diminished tension.....	1	3·03	5	25·00

Of the 35 cases which are alive there are 11 which have remained free from recurrence for three years and upwards the longest interval being seven years since the eye containing the tumor was removed.

We should, however, be careful to avoid drawing an arbitrary line such as a three years limit of recurrence, for cases do recur at a greater interval of time than this, such as is seen in Case 67 (first series), where the patient died of recurrence four years after the removal of the eye.

Six or exactly half (50 per cent.) of the cases which are known to be dead died of recurrence, and of these two had local and general recurrence, or 33·33 per cent., and in one of them (No. 23) the sclera had been perforated and the growth extended into the orbit before the eye was removed; while four had no local recurrence—that is to say, 66·33 per cent.

#### HISTORY OF PREVIOUS INJURY.

In six cases a history of previous injury was obtained; while in one the affected eye is known to have been defective and divergent for many years through an unascertained cause.

Of the injured eyes there is only one in which there is a definite history of a severe blow or wound. This was

caused 30 years before removal by a blow from a skipping rope. The eye had remained quiet until a few months before removal, though quite blind. In addition there was a dense mass of bone in the choroid.

Considering, however, the fact that a lost eye containing bone is liable to become the seat of a malignant growth, and that frequently owing to the condition present the tumor can not be seen until it has existed for many months, one should not be too conservative in the treatment of blind eyes which after months or years of quiescence become painful. It will be found that in a large number of cases the secondary symptoms are due to malignant growths.

#### **Traumatic Pulsating Exophthalmos.**

Mr. Arnold Lawson publishes in the Ophthalmic Hospital Reports for May, 1899, a case of traumatic exophthalmos, following a blow on the back of the head, the result of a fall downstairs. She was treated with rest and iodide for 18 months.

She was kept in bed for a fortnight to try what absolute rest in the horizontal position might effect, with a small ice-bag applied to the temple, a light diet, and Pot. Iod. in small doses. She, however, got steadily worse, and her general health began to fail from the constant pain and want of sleep. About this time I again examined the fundus, and noted that there was a considerable amount of optic neuritis, and that the tortuosity had now extended to the arteries, especially to the smaller ones. A minute venous hemorrhage was also apparent.

At the end of the fortnight further delay was obviously useless, so the patient was anæsthetised, and the right common carotid ligatured, opposite the cricoid cartilage.

Immediate and profound relief was experienced. On the morning after the operation all pain and noises in the head had left her, and all pulsation, bruit, and thrill had disappeared. From this time to the date of her leaving the Middlesex Hospital, June 17, the patient made an excellent and uninterrupted recovery. Three days after the operation I again examined the fundus, and found that a small hemorrhage had occurred into the vitreous, but the veins were distinctly less congested, and the tortuosity of



the arteries scarcely visible. The patient was kept in the horizontal position, with the head between sand-bags for rather more than three weeks after the operation. She was then allowed to sit up, and was finally allowed to move gently about the ward four weeks after the operation.

The following was her condition on leaving the hospital five weeks after the operation:

All subjective symptoms disappeared the day after the operation. She returned three weeks after leaving the hospital presenting an almost complete relapse. All the old symptoms had re-asserted themselves with renewed vigor, with the exception of the noises in the head, which were only present in a modified degree. Since her discharge she had had two very severe attacks of epistaxis, and after each attack she felt considerably relieved for a while. She stated that as soon as she left the hospital and began to undertake home duties once more the old symptoms began at once to show themselves again. She was ordered to rest as much as possible, and to keep a piece of lint wet with lead lotion constantly applied.

I saw her again a week later. She had had another severe attack of epistaxis, two days after her last visit. This attack lasted about three hours, and since then she had felt much better. Her condition had once more considerably improved; no thrill could be felt, and the pulsation was not so heaving as before. The improvement, however, quickly disappeared, and on September 7, she was almost if not quite as bad as before ligature of the carotid. She stated, however, that she was feeling much better than during the previous week, when she had yet another attack of epistaxis more severe than any preceding it, and which had lasted almost continuously for two days. Nevertheless her condition seemed so grave about this time that the propriety of further operative measures was seriously considered; but Mr. Morris decided to wait a little longer.

However, since the date of the last attack of epistaxis, August 31, 1897, her condition has been one of steady improvement without any more relapses, and no further attack of epistaxis.

She remained well after this. The author then discusses

the disease and treatment of this affection in detail and concludes thus:

Finally, this case points out the necessity for prolonged rest in the horizontal position after ligation has been performed. In the case now recorded this treatment was most strictly carried out for nearly four weeks, and yet the subsequent history of the case seems to show that another fortnight in bed would have been well spent.

He also goes fully into the literature of the subject.

Some extremely interesting papers were read at the Portsmouth meeting of the British Medical Association, upon ophthalmic subjects.

A particularly interesting paper was read by the President Mr. Simeon Snell of Sheffield, upon wounds and injuries of the eyes, and his exceptional experience in a large manufacturing district gave him much material on which to base his opinions. He mentioned several improvements for the protection of human eyes.

A particularly interesting and exhaustive paper was read by Mr. Richardson, Cross of Bristol on the pathological significance of sympathetic irritation and its connection if any with sympathetic ophthalmitis.

Prof. Landolt severely condemned the practice of trying to treat a severely damaged dangerous eye with subconjunctival injections of sublimate, and strongly urged the necessity of removing such eyes, instead of still further irritating them by treatment such as this.

There was great unanimity of opinion on this point, and among those who took part in the discussions were Prof. McHardy, Surgeon General, Caley, M. Devereux Marshall, Dr. Geo. E. de Schweinitz, Dr. R. A. Reeve, Mr. Adolf Branner and Dr. John Horn.

Another important paper was read by Mr. Bickerton of Liverpool, on color blindness and defective vision in the Mercantile Marine. He and numerous other speakers condemned in the severest manner the present Board of Trade examinations, as well as the tests used for the army and navy.

**A Case of Paralysis of Divergence: Its Bearing Upon the Theory of Squint and Heterophoria.**

DUANE, ALEXANDER, New York. (*Arch. of Ophthal.* Vol. XXVIII, p. 261.) The author uses a case of conver-

gent strabismus of six years' standing due to paralysis of divergence as a text to dilate in a lucid and interesting manner upon the theory of squint and heterophoria. The main symptoms of the case were as follows: moderate hyperopia; single binocular vision and orthophoria within 6 to 8 inches from the eyes. Beyond this, strictly monocular vision, right eye alone being used for fixation and left one turning inwards. Diplopia if red glass is used. The esophoria increases progressively as the test-object is removed further from the eyes. The esophoria at a given distance diminishes with lateral rotation of the eyes. The excursion movements of the eyes are unrestricted in all directions.—The author shows that the conditions present cannot be ascribed either to paralysis of the externi or to contracture of the interni. He states von Graefe's myopathic theory of squint and finds that though this theory is applicable to the cases of purely concomitant strabismus, it does not explain and even cannot be brought in harmony with some of the characteristics of periodic squint. "If the myopathic element is not adequate in itself to account for all the phenomena of periodic and concomitant squint, what other factor shall we invoke to explain them?" The answer is found in the innervation theories of squint. According to the myopathic theory, "squint is an essentially unilateral phenomenon dependent upon some interference with the individual muscles of one eye. According to the innervational theory, squint is a bilateral affection which concerns a centre governing one of the combined movements of the two eyes." Duane applies this theory to the conditions of convergence-excess and convergence-insufficiency and gives the characteristics of these two conditions. But not all cases of esophoria or exophoria, even when examined at the outset, present the characters of these two conditions respectively.

"For example, the case here described cannot possibly be attributed to convergence-excess. The deviation is marked for distance and diminishes progressively as the object of fixation is approximated to the eyes."

It is therefore not the function of convergence but of divergence that is affected. Duane discusses the question whether divergence is active or passive and also the existence of a distinct nervous mechanism to control it. His

own view is that "this function is probably both an active and a passive process," the recovery from convergence being inaugurated by the elastic pull of the stretched externi and completed by their active contraction. After a theoretic deduction of the symptoms of a case in which the function of divergence alone was abolished, the author finds that his conclusions are reproduced with absolute fidelity in his own case as well as in cases of Uhthoff and Straub. In conclusion Duane comments upon the complex origin of concomitant squint and explains the pathogenesis of squint and heterophoria as follows:

Exophoria and divergent squint may be due to:

"1. Under-action of an adductor (insufficiency in the true sense of the word) or over-action of an abductor, due to abnormalities in structure, insertion, or innervation (muscular squint or exophoria). Not very frequent by itself, but frequent as a complication.

2. Over-action of the diverging power (divergence excess). Fairly common.

3. Under-action of convergence (convergence-insufficiency). Very frequent. May be either accommodative (in myopes) or non-accommodative.

4. One or more of the above anomalies combined (mixed conditions). Such a combination usually obtains in long-standing and marked cases of concomitant divergent squint.

Esophoria and convergent squint may be due to,

1. Under-action of an abductor (true insufficiency) or over-action of an adductor, due to abnormalities in structure, insertion, or innervation (muscular squint or esophoria). Not very common by itself but frequent as a complication.

2. Over-action of convergence (convergence-excess.) Very frequent. May be either accommodative (in hypermetropes) or non-accommodative.

3. Under-action of the diverging power (divergence-insufficiency.) Rare.

4. One or more of the above causes combined (mixed conditions.) Such a combination usually obtains in long-standing and marked cases of concomitant convergent squint.

It is by following an etiologic classification like this that we attain, in my belief, the best success in both diagnosis and treatment."

**On the Injection of a Weak Sterile Salt Solution Into Collapsed Eyes.**

KNAPP, HERMAN. (*Arch. of Ophthalm.* Vol. XXVIII., p. 308.) The author details three cases in which he has injected sterile salt solution into collapsed eyeballs. In the first case the anterior chamber and vitreous contained large quantities of cholesterine crystals which, on account of the attention they attracted, prevented the patient from obtaining employment. An incision was made in the cornea and the anterior chamber and vitreous syringed out with physiological salt solution till no more crystals appeared. The eyeball did not collapse and the chamber was quickly restored.

The second case was a complicated cataract which was extracted and an iridectomy made. During the operation so much watery vitreous escaped that "the scleral capsule lay folded together like a wet piece of linen, over which, in the upper part, the cornea projected like the vizor of a cap." The eyeball was filled with salt solution, resumed its size and shape, recovered undisturbed and has at present 20/100 vision.

The third case was a deaf patient in whom a complicated cataract was extracted in the capsule with great difficulty and loss of much vitreous. A syringe full of salt solution was injected into the anterior chamber, upon which the wound united nicely. On the third day the wound was closed.

From his observations and experiences Knapp feels "justified in recommending the injection of a sterile physiological salt solution (or of any other sterile and indifferent liquid—for instance, boric acid solution) into the eye with a small syringe under the following conditions:

1. When from lack of vitality in old age or any other cause the cornea sinks in so that the eye collapses in such a way as to prevent the wound from closing exactly, a liquid should be injected until the globe has resumed its shape and the lips of the wound apply correctly.

2. Not only remnants of cataract, but also cholesterine and other heterogeneous substances, including perhaps some moveable foreign bodies, may be syringed out of the eye with impunity and success.

3. When during the extraction of a complicated cataract the fluid vitreous escapes in such a quantity that the eyeball collapses either totally, or in such a degree as to prevent the closure of the wound, liquid should be injected to refill the globe and make the wound close.

4. When from an operation or an injury the eye collapses, injection of a sterilized indifferent liquid may restore the shape of the globe, facilitate the closure of the wound, and ward off infection from the entrance of conjunctival secretion into the eye."

**Note on the Use of Eupthalmin.**

KNAPP, HERMAN. (*Arch. of Ophthalm.* Vol. XXVIII., p. 313.) "I found that one instillation of a five per cent. solution had too little effect on the pupil to be of much use. One instillation of a ten per cent. solution.....dilated the pupil in from fifteen to twenty minutes sufficiently for ophthalmoscopic purposes. In thirty or forty minutes a maximum dilatation was reached in most patients. The accommodation was not left intact, but only so little interfered with that the patients did not complain. In from five to ten hours the pupil returned to its previous state. Eupthalmin has no unpleasant side-effects. As an aid in ophthalmoscopic examinations eupthalmin is without a rival. As a cycloplegic it does not compare with sulphate of atropia, and is even more unreliable than homatropine. Of late I discovered a new quality of eupthalmin; namely it does not irritate the conjunctiva or the skin. I can therefore recommend eupthalmin (10 per cent. sol.) 1st. For routine use to dilate the pupil in ophthalmoscopy; 2nd. As a substitute for atropia in cases of intolerance of that drug."

**Note on the Use of Holocain.**

KNAPP HERMAN. (*Arch. of Ophthalm.* Vol. XXVIII., p. 316.) Holocain is as powerful a local anaesthetic as cocaine, over which it has several marked advantages: it acts in a shorter time, which makes it valuable particularly if we want to anaesthetize the iris at operations. "Cocain,

by its constriction of the blood-vessels and other tissues, sucks tissue juice and germs inward, and thus favors infection." Holocain does not do this as it allows free bleeding. The drying effect of holocain upon the cornea is less than that of cocain.

In all painful diseases of the outer coats of the eye cocain ought to be replaced by holocain. "If in contagious ophthalmia we instil cocain into the conjunctival sac, we may relieve the pain, but with the tissue juice the germs are sucked deeper; not so in using holocain." "Holocain can be combined with topical remedies, but I would not countenance the popular combination of cocain with astringents." In holocain, therefore, we have "not only an excellent local anaesthetic, but also a valuable therapeutic adjuvant in combination with other remedies."

**Description of a Portable Electro-Magnet, an Original Device to be Used in Connection with Any Incandescent Electric-Light Current, for the Removal of Pieces of Steel from the Interior of the Eyeball.**

JOHNSON, WALTER B., Paterson, N. J. (*Arch. of Ophthalm.* Vol. XXVIII., p. 326.) Johnson has devised a portable electro-magnet of which he here gives a detailed technical description. Its total length, including tips, is seven and one half inches, and its general shape cylindrical. It weighs eleven ounces. One of the tips or ends is made ovoid in form and extends one-half inch beyond the shoulder; the other end is an elongated tip one and one-eighth inches in length from the shoulder, which may be used in the interior of the eyeball if necessary; the tips may be made of any desired shape, length, or thickness.

The advantages claimed for it by Johnson over other magnets used for similar purposes are: "Its portability, which permits its application at any desired angle as related to the position of the foreign body in the eyeball, and its use with the patient on the back or in any other desired position. Its adaptibility for use in any place where a direct incadescent electric-light current may be found. Its applicability to use for traction by external application or for the introduction of the tip for direct approximation within the eyeball. Its strength—the ovoid tip of the magnet has magnetic energy in opposition with the end of a spring scale equal to a pulling strength of six pounds, and



the elongated tip for use in the interior of the eye has a pulling strength of nearly one pound, so that it possesses strength slightly in excess of that of any of the other various forms of magnet previously introduced for like purposes. It can be furnished complete for about fifteen dollars, which will undoubtedly prove an important factor in its probable adoption for general use."

**The Resection of the Cervical Sympathetic In the Treatment of Epilepsy, of Basedow's Disease; and of Glaucoma.**

JONNESCO, THOMAS, Bucharest. [Translated by Willard Bartlett, St. Louis.] (*Medicine*, Aug. 1899.) The author has performed total or partial resection of the cervical sympathetic ganglia and cords upon sixty-one patients suffering from epilepsy, chorea, Basedow's disease and glaucoma. Of these seven suffered from glaucoma and one from Basedow's disease and glaucoma. Not one of his patients met death as a result of the operation. Only those parts of his paper referring to glaucoma are considered here.

The simple division of the sympathetic trunk, says Jonnesco, is both insufficient and irrational, and it is not followed by degeneration of the sympathetic chain. Only resection of the ganglia is in accordance with the teachings of anatomy and physiology. From the superior ganglion are derived the nerves for the eye. Therefore, "extirpation of the superior ganglion is sufficient in glaucoma, as it furnishes the single gateway for the passage for sympathetic fibres to the eye and periocular tissue, with the exception of those which spring from the brain, along with the trigeminus and accompany the same. Removal of the ganglion just mentioned destroys the function of the vasoconstrictor fibres, hence the dilatation of the arteries, the decrease in blood pressure, and the lessened extravasation. The effect is the same upon the excitosecretory filaments, hence the decrease of aqueous humor. The iris dilator branches are influenced in like manner, explaining the energetic contraction of the pupil, with consequent opening of the canals in the iris angle, and unimpeded escape of the aqueous humor from the eyeball. Furthermore, the nerves to the unstriated peribulbar muscles no longer transmit influences, thus allowing relaxation



of them, together with removal of constriction from the emissary veins and the re-establishment of the normal return circulation in the eye.

We see herein the probable way in which the sympathetic causes the glaucomatous phenomena, and at the same time the mechanism of their disappearance, after resection of the superior ganglion. As regards the origin of the disturbances in glaucoma, I am of the opinion that it is a central one, located either in the brain or in the medulla, whence the ocular fibres of the sympathetic spring, combining later to pass through the superior ganglion. Excision of the same has no effect upon the primary focus of the disease, but simply intercepts the continuity of the medium which carries abnormal influences to the eye.

Now as to postoperative manifestations. Among the temporary ones are congestion, warmth of the face, tears, nasal secretion, perspiration, increased saliva and conjunctival reddening on the affected side. As permanent effects of the operation, irrespective of the disease for which it was performed, we have narrowing of pupil, paresis of the same, ptosis, and sinking of the eyeball within the orbit; all of these phenomena being due to paralysis of the dilator muscle of the pupil, of the smooth muscles in the upper lids, and of those contained in Tenon's capsule.

*Remote effects of the operation:* There are none; I have not observed the slightest trophic disturbance. The procedure has not the least evil influence upon the general or physical condition; in fact, it clearly benefits the nervous state in Basedow's disease and epilepsy."

"In glaucoma the operation has been invariably productive of good. I have performed it upon eight patients, one of whom had Basedow's disease and glaucoma at the same time. On this one I resected all the six ganglia; on the others I limited myself to the superior ganglia, having in four cases removed both of them. In the remaining three I did the operation on one side only. With regard to the forms of glaucoma treated, one was acute, one of the chronic irritative variety, three of the absolute chronic irritative, and three more of chronic simple glaucoma.

"The direct results of the operation were the following:

(1) Lessening of the intraocular tension, especially in 4 cases; (2) a contraction of the pupil; (3) disappearance of periorbital pain; (4) cessation of the attacks in irritative glaucoma; (5) lasting improvement of sight and enlargement of the field of vision in those cases in which visual acuity was retained and atrophy not complete."

**The Question of Operation of the Injured Eye in Sympathetic Ophthalmia.**

SATTLER, ROBERT, Cincinnati. (*Ophthalmic Record*, July, 1899.) If the opportune time for preventive surgery in case of an injury threatening sympathetic ophthalmia has been lost the difficult question arises whether enucleation or one of its substitutes for the injured eye is still necessary or expedient. The writer's experience leads him to the opinion that sympathetic ophthalmia when once excited, "with infallible certainty terminates in hopeless destruction of vision," even if the injured eye is subsequently removed. The indications for operating upon the injured eye are therefore given by the condition of this eye itself. The writer summarizes the principle points of his article in the following words:

"Enucleation of an injured eye (particularly in rupture of sclera, punctured wounds of globe with extension to uveal tract) when active sympathetic ophthalmia of the fellow eye has been excited, is not justifiable, for the reason that after a complete subsidence of inflammatory reaction in both eyes the injured eye, alone may offer a chance for partial restoration of sight.

"Enucleation of an injured eye which has excited sympathetic ophthalmia is justifiable, often a measure of necessity, in cases of a traumatism produced by the lodgment in the eye of a foreign body which cannot be localized. If such eyes are a source of continued suffering, the enucleation should be speedily done, but without hope or prospect that this will influence the course of the inflammatory disturbance.

"Enucleation of the injured eye with the hope that it will influence favorably the progress of sympathetic ophthalmia has little or no foundation in accurate clinical observation or surgical experience. There certainly is no reliable proof that it has ever arrested, or even retarded, the fatal course once begun. It must therefore be considered

an uncertain measure of interference which expediency even can only counsel in a small fractional number. It must, furthermore, be added that there are no reliable data, that it is harmful in the sense that it excites a more rapid or more disastrous course in the sympathetically affected eye. This is more likely due to the inherent degenerative activity which varies in each case so far as its destructive vitality is concerned."

**The Mydriatic Action and Value of Euphthalmin.**

JACKSON, EDWARD, Denver. (*Ophthalmic Record*, July, 1899.) "Euphthalmin is worthy the general attention of ophthalmologists, both on account of its real merits, and because of some poorly founded claims that have been made for it." The following conclusions have been drawn by the writer from its use:

"Euphthalmin acts on the eye as a true mydriatic. Its influence is more feeble and brief than that of homatropin. Its influence on accommodation is relatively slight; so that it has no practical value as a cycloplegic; and its cycloplegic influence causes but trifling annoyance when it is used as a mydriatic.

"It is the best agent we have to produce brief dilatation of the pupil under a strong light; and stands next to cocaine in value for dilating the pupil for the ophthalmoscopic examination.

Combined with cocaine it produces a satisfactory mydriasis for the examination of the eye, with the least annoyance to the patient and the most rapid recovery."

**A Communication Upon Acoin—A New Local Anaesthetic.**

RANDOLPH, ROBERT L., Baltimore. (*Ophthal. Record*, Aug. 1899.) Acoin is a white powder, quite soluble in water in the proportion used in the writer's experiments, i. e., 4 1/2 grains to the ounce of water. It is derived from guanin, which is found in almost all animal and vegetable cellular tissue. Acoin is related to caffeine and theobromin. Randolph's conclusions concerning it are as follows:

"1. Acoin in solutions of 1:100 and 1:300 produces satisfactory anaesthesia in an unirritated eye in about the same length of time as cocaine.

2. In more than one case where the eye was congested

repeated instillations of acoin were inadequate to produce satisfactory anaesthesia.

3. Inspection of the cornea with a high power lens failed to show any defects in the epithelium after its use.

4. Acoin has no effect upon accommodation.

5. It has no effect upon the size of the pupil.

6. It does not increase intraocular tension.

7. Several experiments showed that the staphylococcus pyogenes albus did not grow in agar which contained acoin in the proportion used in the clinic, and furthermore that exposure of this organism to the action of acoin for twenty-four hours was followed by the death of the organism. This would look as though acoin were not only an inhibitor of the growth of the staphylococcus albus, but that it also killed this organism after a certain length of time."

#### **Experiences with Operations for Secondary Capsular Membranes.**

RAY, J. MORRISON. (*Ophthalmic Record*, Aug. 1899.) After stating the position held by some leading ophthalmologists on the questions relating to operations for secondary cataract the writer mentions some of his own experiences in connection therewith. No matter which method of capsulotomy is used at the primary operation "we are, in a greater or less percentage of cases confronted by the necessity of after interference." In 62 operations for secondary cataract performed by Morrison "the knife needle was the instrument used in 43 cases, the double needles in 9; operation with hook in 4; Graefe knife in 3; De Wecker scissors in 1."

"Two eyes were completely lost as a result of the secondary operation. In several others more or less serious and annoying sequela resulted." In one case in which Knapp's knife needle was used and the eye and instruments had been well cleansed, the operation was shortly followed by pain and ciliary injection. On the second day a slight cloud was noticed in the vitreous which developed into purulent hyalitis and panophthalmitis. The infection started at the seat of puncture and its source was undoubtedly introduced at the time of the secondary operation.

A second case "while not disastrous as the one just reported, had in its early appearance a similar outlook." The morning following the operation there was much ciliary injection, a small gray dot denoted the site of the corneal puncture, and extending from this across the anterior chamber to the upper margin of the divided capsule was a grayish yellow line resembling pus. Ultimately, however, absorption took place and vision remained 6/15+.

A striking complication was presented by the third case. During the extraction the patient pressed, thereby forcing out the lens and causing prolapse of the iris and a quantity of vitreous. During the attempt to divide the secondary cataract that formed, the membrane yielded slowly before the cutting edge of the knife-needle, and as this was withdrawn a retinal detachment came forward into the pupillary space. Concerning this case the author says: "I believe this accident due to the use of a knife-needle on a tough membrane in an eye where vitreous had been lost. I have invariably noticed more reaction in secondary membrane operations in eyes where vitreous has escaped at the time of the original extraction." A fourth case illustrated another important complication. After the primary operation of simple extraction the base of the iris remained adherent in the corneal wound. Three months later a secondary operation with the knife-needle was performed. On the day after this the patient suffered great pain, there was circumcorneal injection and T+2. Morphine and eserine did not lower the tension and an iridectomy was attempted. The latter was unsuccessful, but the wound healed kindly leaving the eye painless. Vision was less than 6/60.

Still another result of an operation for after cataract is presented by a fifth case. A year after the original extraction Vision=6/20. A striated opaque capsule which filled the pupillary space was divided with two needles. "Much reaction followed. There was ciliary injection and tenderness for six weeks and a number of vitreous opacities. V=3/10. Later a low form of iritis with ciliary injection and tenderness began first in one eye and then in the other. When last seen the vision was 6/60, vitreous contained numerous floating particles, and the fellow eye showed complete posterior synechia with plastic deposits on the capsule of a cataractous lens."

**Nitric Acid as a Cautery in Corneal Ulcers.**

JOHNSON, J. S., Ann Arbor. (*Am. Journ. of Ophthalm.* July, 1899.) "The immediate results which we seek to obtain by any cautery are, primarily destruction of necrotic tissue, stimulation to repair and perhaps, incidentally antiseptics by the destruction of germs. The ultimate results desired are healing of the ulcer as rapidly as possible with the least possible opacity." The two chief methods of cautery now in use, the electro-cautery and silver nitrate, are not free from objections. The former if applied cold to the ulcer and then brought to a red heat may act too strongly, or if applied hot with a quick jab may not reach the exact part desired. Against nitrate of silver the objection is quite universally raised that the cicatrix is apt to be opaque. In nitric acid, which Johnson has used for ten years, he thinks we have an agent which answers all requirements and he strongly recommends it for careful and impartial trial. His method is: "Make a dilution of the chemically pure acid, varying in strength from 9 to 15 per cent. according to the effect desired. From some fine grained, soft wood shape a point suitable to the case. It may be round, flat, spoon-shaped or quite pointed, as indicated by the size, shape or situation of the ulcer. This wooden applicator is then thoroughly saturated with the dilute acid, care being exercised that no drop of the fluid depends from it or any material excess of the fluid adheres to it. Having cocaineized the cornea, apply the saturated point deliberately to the ulcer, watching the effect until the whitening of the destroyed tissue shows that you have obtained the desired result; then wash with water or saline solution. The separation of the slough is speedy and the employment of ordinary methods of after treatment will not be interfered with.

"As a rule, the application is painless and the reaction moderate. The opacity of the cicatrix is as slight as by any other method if not less. The remedy is inexpensive, easily accessible and can safely be repeated if necessary. I have had the objection raised that it is dangerous and not well under control; it is perfectly safe and under the most perfect control in every way, and best of all, it is effectual."

**A Water Screen for Ophthalmologists.**

DE OBARRIO, P. (*American Journal of Ophthalmology*, July, 1899.) The writer has tried "to do away with the different inconveniences of the older screens and to produce an apparatus which may be used as an opaque body, as a perfect screen against all rays, the luminous ones as well as those of heat, and which, when necessary, will permit the passage of the luminous rays while warding off completely the hot ones.

"The apparatus consists of a solid iron stand with a broad base; from the center of the round base rises a hollow metallic cylinder containing a steel rod with screws as a support to a thin metallic case, into this a glass case fits, which measures about 25 x 20 x 3 cm., and is intended to contain water. On one of the sides of the glass case, on its upper margin, a curtain of black cloth is attached, having a spring arrangement, such as is used on window shades.

"This apparatus can easily be moved in all directions and be rotated on its vertical axis, but it is intended to be made stationary. The water case, with its curtains, can be raised or lowered as may be desired or as circumstances may require, by means of the central rod in the cylinder and fastened with a side screw. Having been placed on the table in a convenient position, between the luminous source and the patient's head, and the curtain being lowered, the apparatus serves as an opaque body shading off not only the light, but also heat rays. This is the way to proceed in order to make the ophthalmoscopic examination in the inverted image, which can be prolonged indefinitely, since the patient suffers no discomfort from the heat. In case of performing the examination with the erect image, the screen is placed in a somewhat oblique position; with this precaution the examination can be made without any difficulty. For oblique illumination the apparatus is of still greater advantage.

"In this case, as in the previous ones, the screen remains in place, the only thing to be done is to touch the curtain spring and allow the curtain to roll up, thus permitting the passage of the luminous rays through the clear water, and preventing entirely the passage of any heat."



**Euphthalmin and Mydriatics Which Are Favorable for Ophthalmoscopic Examinations.**

DARIER, H. (*The Therapist*, London, July, 15th, 1899.) "The invention of a mydriatic, having a rapid and brief action, without in any way affecting the power of accommodation, is still a desideratum to be realized." The writer mentions the shortcomings of the mydriatics in common use, such as cocain, ephedrin, homatropin, duboisin and mydrin and finds that "the one which appears to us to unite the most of the conditions that we look for in a mydriatic" is euphthalmin, employed as a 5 per cent. solution. "One or two drops of this solution suffices to bring about in thirty-five minutes a maximal pupillary dilatation, which permits ophthalmoscopic examinations to be most easily carried out without appreciably affecting vision. Except for a slight dimness caused by the diffusion of the luminous rays penetrating through the dilated pupillary orifice, the patient can read the ordinary type of a book or paper without much difficulty, and the action of the euphthalmin passes off completely in about two or three hours." This agent is recommended in cases of suspected iritis, for if with euphthalmin the dilatation is rapid, regular and complete, the diagnosis is made without causing the inconveniences following atropine. There is great uniformity in the conclusions reached by Darier and several other authors concerning the action of euphthalmin. Summed up they are:

1. Rapid dilatation of pupil.
2. Accommodation influenced very little.
3. Intraocular tension not modified.
4. No toxic action has been observed.
5. No irritation of cornea or conjunctiva.
6. Mydriasis rapidly disappears.
7. Action is weaker and slower in old people than in young.

**The Effects of Influenza upon the Eyes.**

OPPENHEIMER, HENRY S. (*N. Y. Medical Journal*, Aug. 12th, 1899.) Reviewing the literature upon this subject the writer finds the following long list of eye complications in influenza: Abscess of the lid, herpes zoster of the lid, hemorrhages into the conjunctiva, catarrhal con-



conjunctivitis, croupous and diphtheritic membranes on the conjunctiva, subconjunctival abscesses, keratitis dendritica, punctata and suppurativa, serpiginous ulcers, keratitis parenchymatosa, herpes cornea, stenosis of lachrymal duct, purulent dacryocystitis, episcleritis, suppurative and non-suppurative tenonitis, orbital cellulitis, iritis, iridochoroiditis and iridocyclitis both purulent and non-purulent, septic hemorrhagic retinitis, retrobulbar neuritis and neuritis optica intraocularis, hemianopsia, chromatopsia, paresis of the external and internal ocular muscles and of the sympathetic, and finally attacks of acute glaucoma.

The writer then gives his explanation for the occurrence of these lesions. The attacks of glaucoma in patients so predisposed he attributes to the lowering of strength during or after influenza ascribing to it no specific effect. The same applies to paresis of the eye muscles. Nor is a specific effect necessary to explain the hemorrhages into the various parts, for which the changes in the blood are the responsible factor. "In purulent uveitis and orbital cellulitis, panophthalmitis, etc., emboli containing pyogenic cocci are evidently the original factors. . . . There remain in conclusion, the severe nervous troubles to be accounted for. . . . To my mind, the lack of appetite, the vitiated functions of the digestive apparatus, the consequent changes in the blood, lowered nutrition, together with the great depression of the heart's action—will account for the profound impression upon the nervous system which is so commonly observed, and explain the chromatopsia, scotomata, inflammations and paralysees of the nerves and muscles supplied by them."

**Reflex Irritation, with Special Reference to Eye Strain, a Factor in Nervous and Mental Disease.**

DREW, C. A. (*Med. Record*, Sept. 9, 1899.) This paper, though it brings no direct evidence to show the effects of eye strain upon the nervous condition, is a strong but moderate plea for the recognition of such influences, at the same time warning against attaching too much importance to them. "I deem it," says the author, "of the greatest importance to consider this question from a dispassionate and non-partisan standpoint. For if there is anything

well calculated to bury germs of truth too deep for a resurrection, to discredit well-fortified theories, and bring excellent therapeutic measures into disrepute, it is their intemperate advocacy by those ultra-specialists who, in the language of Dr. Peterson, are prone to apotheosize the eye, the nose, the uterus, or any single viscus, and make it the divinity to which all other organs must kneel."

Reflex irritation is defined by Drew to mean a "limited or widespread exhaustion of cortical nerve centres because of nerve currents increased in force or duration from peripheral organs, malformed, undeveloped or the seat of pathological processes. It includes such molecular and chemical changes as may take place in the conducting nerve fibres for want of physiological rest."

•Oblique hypermetropic astigmatism with non-parallel axes is the condition which usually causes the greatest eye strain, according to the author. Much importance is also attached to the faulty relation between the power of the ciliary and internal recti muscles. "The relative strength of the internal and external recti will guide the physician in determining whether or not to prescribe glasses for a hyperopic patient to wear constantly." "It is not the cross-eyed man nor the near-sighted man who suffers from this cause; nor is it he whose astigmatism is so great that no effort of the ciliary muscles can compensate for the unequal curvature of different meridians of the cornea. Rather it is he whose eyes can be kept in line and whose ciliary muscles can neutralize anatomical imperfections of the cornea."

#### **Atrophy of the Optic Nerve Following Profuse Hemorrhage.**

(*Medical Record*, Sept. 9, 1899.) Commenting editorially upon optic nerve atrophy following profuse hemorrhage the *Record* cites a case published by Theobald. (Bulletin of the Johns Hopkins Hospital, Vol. X., No. 98.) From a study of this case and of the literature of the subject, the conclusion is reached by him— (1,) that the weight of evidence afforded by the ophthalmoscope points to thrombosis of the central retinal artery as the usual cause of the blindness that attends post-hemorrhagic anemia; (2,) that the resistance offered the already enfeebled blood-current in the central retinal artery by the intra-

ocular tension is an important etiological factor in determining this result; (3.) that in exceptional cases, the ophthalmoscope indicates that the thrombosis occurs not in the artery, but in the central retinal vein; (4,) that in other exceptional instances, it may be that the loss of sight and the ophthalmoscopic changes that accompany it are the result of a hemorrhagic or serious effusion into the optic nerve or its sheath (Samelsohn); and here, again, the obstruction and damming back of the blood-current in the retinal artery by the intra-ocular tension, probably, have much to do with bringing about this result."

#### **Epileptic Eye Strain.**

CAPPS, C. M. (*N. Y. Med. Journ.* Sept. 16, 1899.) This term the writer considers well applicable to those cases where eye strain is supposed to be the cause of epileptic seizures. "It seems a very logical conclusion that eye strain might produce an epileptic convulsion. When we consider the complicated arrangement of the nerves of the iris and ciliary processes, I do not believe that the direct effort that is made by the eye to produce normal refraction causes an epileptic attack; but the continued effort that is put on the filaments of the nerves of accommodation in course of time sets up a reflex condition of the sympathetic system that produces the paroxysm, just as it does in other organs of the body." The writer reports the following two cases of "epileptic eye strain:"

Case I.—Miss Z., aged nine years, came under observation one year ago with this history: Epileptic convulsions since four years of age; from three to six every month. Pupil dilated with atropine and convulsions stopped. The patient had compound myopic astigmatism.

R. —2.00C—50, cyl. ax. 90°.

L. —1.50C—75, cyl. ax. 90°.

There has been no return of the epilepsy at the time of the present writing.

Case II.—Miss Q., aged eight years, epileptic since three years of age, with compound hypermetropic astigmatism.

R. +1.50C+75, cyl. ax. 180°.

L. +2.00C+50, cyl. ax. 180°.

These glasses were prescribed five months ago. No return of epilepsy at the present writing

"It is fair to say that the good results of belladonna in these cases was due only to the power it had to dilate the pupil [and paralyze the accommodation (J. W.)], and it was lost as soon as the effect passed off."

### **Conjunctival Hemorrhages.**

(*Modern Medical Science*, August, 1899. Reprinted from Jour. Eye, etc. Diseases.) "Apropos of the death of an infant from bleeding at the eyelid, lately reported in "*Modern Medical Science*." Abbe cites similar cases which have been reported. Stower saw severe bleeding from the conjunctiva of the upper lid of an infant of seven months. A new growth with a granular surface was found under the lid, which was supposed to be a granuloma developing from a chalazion. Jessop observed severe hemorrhages in a woman twenty-seven years old, which were caused by slight naevoid changes in the lid. He mentions three recorded cases. These five cases had distinct anatomical causes, and are not to be classed with Dr. Abbe's case. Shirley relates that he had occasion to scarify freely the conjunctiva of an apparently healthy negro of two weeks for muco-purulent conjunctivitis, and that the hemorrhage that ensued went on, in spite of all efforts to control it, to a fatal issue. Nettle-ship once saw hemorrhage continuing for some time, without apparent cause, from the conjunctiva of the lid, in a child recovering from purulent ophthalmia. Pomeroy saw an infant whose mother had dangerous post-partum hemorrhage. Sol. arg. nit., 2 per cent. was used in the eyes one day after birth. In twelve hours there was a serosanguinolent discharge, which in twenty-four hours became wholly bloody. The child died, in spite of all efforts to control the persistent oozing. Salva reports a case of spontaneous hemorrhage of the conjunctiva in a young woman, of excellent health, and in whom there was no history of haemophilia. In this case, there was slight bleeding of the conjunctiva of the right eye without apparent lesion to account for it. The lachrymal gland and sac could be excluded as giving origin to the hemorrhage, the blood seeming to filter through the conjunctiva. The only remedy which seemed to possess any power of controlling the hemorrhage was protargol, which the author thought

was of great interest, as indicating the real value of the penetrating power of this drug. He thought the hemorrhage of hysterical origin analogous to those occurring in the skin."

**Report of a Committee of the Ophthalmological Society of the United Kingdom Appointed in March, 1896, to Consider the Relative Value of Simple Excision of the Eye-ball, and the Operations which have been Substituted for it.**

(Transaction of the Ophthalm. Soc. of the United Kingdom, 1898.) (Continued from page 381.)

Mules originally recommended, prepared catgut to be used for sutures [in the operation bearing his name]; silk, horsehair and silver wire have also been tried.

Frost and Grimsdale inform us the "material of the sutures in their cases did not appear to be of much consequence; silver was abandoned because it was found troublesome to remove. Silk and catgut were employed the more frequently."

Hill Griffith says, "catgut is better than silk, for the latter requires to be removed or is apt to cut its way through the sclerotic, leaving little openings corresponding to the knots."

Bickerton prefers boiled chromicised catgut, he has found the stiff ends of horsehair cause irritation and provoke spasm of the lids.

With regard to the after-treatment, the application of ice compresses or an ice-bag for the first twenty-four hours is generally regarded as the best means of diminishing the amount of reaction.

The importance of a careful examination of the hollow, artificial globe, previous to its insertion, to ascertain that it is perfect in construction, is shown by the following case reported to us by Frost and Grimsdale:

Ann R., aet. 63. Glaucoma of old standing. The wound, after Mules' operation, did not heal in the centre, and an attempt to close it failed. She returned four and a half years later, with the opening the size of a cornea. In the centre of the exposed portion of the sphere was a pin-hole aperture, and the sphere was about one-third full of pus. The authors suggest that the opening was due to defective closure in the manufacture.

When the tissues fail to completely unite over the surface of the artificial globe, and a fistula is left in which it is exposed, the usual course of events is for this opening gradually to increase in size, until ultimately the globe escapes.

Three forms of treatment have been adopted to remedy this condition:

1. Refreshing of the edges of the opening and the bringing of them together.

2. Removal of the artificial globe, the paring of the edges of the wound, and the insertion of a smaller globe.

3. Paring the edges of the aperture, and grafting, so as to cover it, a piece of mucous membrane from the patient's lip.

We have no notes of any case in which the first mode of treatment proved successful, though it has been frequently tried.

Mules informs us that in two cases he had occasion to adopt the second mode of procedure, and that both did well.

Lang also employed it successfully in one case.

The third mode of treatment, suggested by John Griffith, was successfully put into practice in a case by Juler.

Insertion of artificial globe into Tenon's capsule.—Concerning the technique of the operation for the insertion of an artificial globe into Tenon's capsule, we have nothing to add to what has been laid down by Lang in his communication on the subject to this Society; because the operation does not seem to have been practiced with success by others.

Lang recommended that the size of the artificial globe used should be  $\frac{2}{3}$  that of the excised eye. That after excision of the eyeball Tenon's capsule should be irrigated with iced antiseptic lotion. That Tenon's capsule should be united over the globe by three fine silk sutures. That a few horsehairs should be put under these sutures to act as a drain. That the conjunctiva should be united independently and horizontally by three more sutures, and that an iced pad of alembroth wool should be applied.

Optico-ciliary neurectomy.—For the performance of optico-ciliary neurectomy both Schweigger and Linds

Furgeson recommend that the nerve should be approached from the inner side.

The former states that he is convinced, from a long series of experiments, that the removal of a piece of optic nerve 10 mm. long is not feasible from the outer side.

Both these operators recommended that the internal rectus muscle should be secured with a stitch, either immediately before or just after it is divided.

Schweigger draws forward the globe with a small pointed double hook, and after the nerve has been cut through as far back as possible with scissors curved on the flat, exposes the posterior surface of the globe by rotating it forwards with the hook.

Linds Furgeson has had constructed a pair of curved scissors with a clamp on the concave surface. With this instrument he cuts the nerve, at the same time clamping its ocular end, and thus is enabled to rotate the posterior pole outwards with great facility. He says: "I look on it as absolutely essential that the eye should be completely rotated till the nerve entrance occupies the position usually occupied by the cornea, in order that the whole back of the globe may be seen, and the ciliary nerves snipped away in the daylight."

Schweigger not only cuts off the optic nerve remaining on the eyeball, and bares by dissection the whole posterior surface of the sclerotic, but also divides the insertions of the oblique muscles.

The reduction of the proptosis caused by hemorrhage is assisted, Linds Furgeson says, by passing the curved scissors behind the globe to allow of some of the blood escaping.

Schweigger, after having united the tendon by catgut threads previously introduced, and closed the conjunctival wound, stitches the lids together with three silk sutures as a precaution against the development of an undue amount of proptosis.

Abscision. The operation for abscision is now so little practiced that the committee has not elicited anything with regard to its technique, which has not been previously published for several years. They consider, therefore, that it is unnecessary for them to deal with the matter ere. The insertion of a continuous suture passed through



the conjunctiva only, the *suture en bourse* of De Wecker, would, they think, be the preferable way in which to close the opening left by the removal of the cornea.

6. To what extent should the choice of operation depend on the nature of the case? The chief conditions which necessitate excision of the eyeball, or one of the operations which have been substituted for it may be classified as follows:

1. Intra-ocular malignant growths.
2. Suppurative panophthalmitis.
3. Wounds of the eye likely to excite sympathetic ophthalmitis.
4. Anterior staphyloma.
5. Shrunken eyeballs.
6. Painful blind glaucomatous eyeballs.

We will now discuss the suitability of the operations under consideration in each of these different classes of cases.

1. Intra-ocular malignant growths. In case of an intra-ocular malignant growth the only operation suitable is excision of the eyeball. In none of the other operations can the removal of the whole of the growth and the probable freedom from local recurrence be so satisfactorily secured.

2. Suppurative panophthalmitis. In cases of suppurative panophthalmitis, excision seems undoubtedly to involve a risk of meningitis, which, however, is a very infrequent occurrence. It seems probable that none of the alternative operations have been performed with sufficient frequency to allow of its being stated that they are less prone than excision to be followed by this complication. Fatal meningitis has, also, occurred after needling of cataract, extraction of cataract, and iridectomy for glaucoma; it might consequently result from the operation of evisceration.

We have already referred to one case in which death from meningitis followed evisceration.

A patient with panophthalmitis has generally, when the time for operation comes, been suffering acute pain for some days. The operation of excision, at once relieves this while evisceration, in consequence of the reaction which follows, may for a time intensify it.



3. Wounds of the eye likely to excite sympathetic ophthalmitis. We have shown that sympathetic ophthalmitis may set in after all the operations under consideration.

There is no definite proof that any of the operative procedures themselves can excite this disease, though the possibility of their having done so cannot in some cases be excluded. In considering the relative immunity afforded by these different operations, we have found that after Mules' operation, optico-ciliary neurectomy, and abscision, the freedom from sympathetic ophthalmitis has been less than after excision.

With regard to Mules' operation, the facts we have collected seem to show that it is only when it has been delayed until more than three weeks after the receipt of the original injury that sympathetic inflammation is to be feared.

If performed within three weeks of the original injury, and if care be taken to remove entirely the uveal tract, it probably affords as great an immunity as can be obtained by excision.

When sympathetic ophthalmitis has already appeared, the operation of excision should be preferred to evisceration.

In cases of recent injury, when the sclerotic has been much contused or burnt with caustics, excision should be performed, because if the sclerotic is left it is liable to slough.

4. Anterior staphyloma. Cases with disfiguring anterior staphylomata are those best suited for Mules' operation, the eyes being as a rule, at the time of the operation, free from inflammation and not themselves likely to give rise to sympathetic disease.

This is also the class of case in which the operation of abscision has been chiefly practiced. Abscision is an operation which the committee does not recommend, mainly on account of the frequency with which the stump becomes painful and tender, and gives rise to sympathetic irritation in the other eye.

The committee recognizes, however, that in certain countries, and among certain communities whose religious or other scruples are strongly opposed to the idea of

removal of the eye, this operation may be of undoubted service.

In a case in which there is an anterior staphyloma in both eyes, if the operation of abscision is performed, the opening being closed by the *suture en bourse* inserted into the conjunctiva, there will be the possibility of preserving perception of light, and at the same time of removing the unsightly disfigurement.

5. Shrunk eyeballs. If a globe is much shrunken the introduction of an artificial globe into the emptied sclerotic is not possible, and excision is the operation that must be resorted to.

6. Painful blind glaucomatous eyeballs. These eyes are not a source of disfigurement to the patient, and as they are not likely to set up sympathetic inflammation, an operation which will remove pain without altering the appearance of the eyeball (or patient) is worthy of consideration. It is therefore, for these cases, if any, that the operations of optico-ciliary neurectomy or neurotomy are best suited. Unfortunately we have already shown that the relief of pain in these cases after optico-ciliary neurectomy is not always permanent.

As such eyes are not likely to set up sympathetic inflammation they are well suited for Mules' operation.

There are certain general conditions besides that of the eyeball which have to be taken into account in the choice of operation, viz.:

1. Age of patient.
2. Condition of patient's general health.
3. Patient's occupation and social status.
4. Patient's surroundings.

1. Age of the patient.—It is more important generally to obtain the best possible cosmetic condition in a young patient than in one advanced in life.

As a rule young patients will be found more willing than old ones to endure a prolonged course of treatment, and to suffer a certain amount of pain, for the sake of their appearance. Hence Mules' operation may be suitable in young people, where in similar cases it is advisable to perform excision in the aged.

2. Condition of the patient's general health.

If the patient's health is in any way deteriorated, it is

necessary to consider whether the additional shock from excessive reaction, which is likely to follow Mules' operation, may not seriously aggravate his malady. The alternative operation of excision is free from this risk.

3. Patient's occupation and social status.—There are many occupations in which an individual would be unable to obtain employment with a conspicuous and unsightly glass eye, and where, consequently, every endeavor should be made to obtain the least possible disfigurement which is compatible with safety. On the other hand, there are occupations in which individuals are much exposed to the risks of blows on the face, and in whom it is not advisable that an artificial globe should be inserted. In certain grades of society the cosmetic effect is of greater importance than in others.

4. Patient's surroundings.—We have already referred to the religious and other scruples which among certain communities make people absolutely refuse to have the eye removed. In these circumstances, consequently, the operations of abscision or optico-ciliary neurectomy may be suitably performed when under other conditions, excision or evisceration would be advisable.

In countries also where glass eyes are not easily obtained, or where the people are too poor to be likely to buy and renew them with sufficient frequency, the same course may be necessary, though, as a rule, simple excision with partial union of the lid margins is to be preferred.

W. ADAMS FROST, Chairman.

ARTHUR H. BENSON,

ERNEST CLARKE,

JOHN GRIFFITH,

PRIESTLEY SMITH,

E. TREACHER COLLINS, Hon. Sec.

# ABSTRACTS FROM RECENT GERMAN OPHTHALMIC LITERATURE.

Quarter Ending September 30, 1899.

BY

ROBERT L. RANDOLPH, M. D.,

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## **Phlegmon of the Orbit of Dental Origin.**

DAGILAIISKI, DR. W., of Novgorod. (*Klin. Monatsb. für Augenheilk.*, Juli, 1899.) The case reported by Dagilaïski, is interesting not only because of the favorable termination of the disease but also because of its point of origin. The patient, a boy seven years old, was seen on February 26th, and at that time he had a swelling of the tissue about the eye. Two weeks previously he had suffered with tooth-ache in a tooth in the upper jaw and the cheek was very much swollen. The mother took the child to a hospital where pus was pressed from the diseased tooth and hot poultices were applied to the cheek. The swelling of the cheek however progressed and in two days the region of the eye began to participate in the swelling. At this time the child had rigors and fever and sharp pains in the eye. For two weeks he suffered from sleeplessness and lost flesh rapidly. He had had an abscess behind the ear, but with this exception his previous history was good. The entire left side of the face was swollen, extending up into the temporal region and all over this swollen area it was exceedingly painful especially at the lower border of the orbit and on the anterior surface of the antrum. The lids were tense, swollen and closed tight. The conjunctiva was chemotic and any attempt to open the lids was followed with great pain. There was considerable protrusion of the eyeball and the movements of the latter upward and downward were much restricted, while the movements right and left were free. The pupillary reaction was normal, so also the cornea. No ophthalmoscopic examination could be

made. The mucus membrane of the nose was moist and injected and on the upper lip were some herpetic eruptions. No pus could be detected in the nose at the opening of the antrum of Highmore. The jaws opened with difficulty and there was marked fetor from the mouth. The diseased tooth proved to be the first upper left molar which was found to be carious. The child was now evidently suffering. His temperature was 39.2 and pulse 130. The tooth was extracted and the antrum washed out. During the irrigation a great deal of pus flowed out through the nose. The patient improved from this time and in less than ten days was well the eye having regained all its functions. Dagilaiski is of the opinion that the process made its way from the tooth along the periosteum of the upper jaw. Cases like these are rare and are worthy of record.

**Congenital Melanosis of the Conjunctiva, (double.)**

KRUKENBERG FRIEDERICH, DR., Rostock. (*Ibid.*) Acquired pigmentation of the cornea is not infrequently seen. Congenital pigmentations however have been rarely described. The following case is reported by Krukenberg. The patient was a woman forty-five years old whose vision had always been bad. By superficial examination the corneal anomaly was not visible. Close inspection with oblique illumination showed that the middle of the cornea was colored a dark brown and that this condition was present symmetrically on both sides. The brownish color was deepest in the middle and the whole pigmented area was somewhat oval in shape and covered nearly the entire pupillary area. The brown corresponded in shade to that of the iris. It was evident also that the pigmentation was situated in the deeper layers of the cornea and consisted of an agglomeration of minute pigment granules which were more closely massed in the center of the pigmented area than at the periphery. There was no evidence of an inflammatory origin. The iris was absolutely normal and the media clear. Apparently the eye had never been the seat of inflammation. The author thinks that the anomaly had its origin in foetal life at a time when the pupillary membrane was lying on the cornea. Maybe at this time an emigration of pigment cells took place from the iris into the cornea.

**A Case of Resection of the Cervical Sympathetic.**

ZIMMERMANN, DR. W., Stuttgart. (*Die Ophthalmologische Klinik*, 5 August, 1899.) Zimmermann was at first disposed to regard this operation with suspicion, but the following case of glaucoma where iridectomy had failed to relieve, has converted him to the views of Jonnesco and Demicheri. The patient was thirty-four years of age. The glaucoma resulted from an insidious recurrent irido-cyclitis. The tension was +3. There was marked excavation of the disc on both sides. Vision in the right eye was 4/50—4/35 and in the left eye the vision was 4/20 and was slowly growing worse. The left visual field was normal but the right was somewhat narrowed. Twenty-four hours before the operation myotics were withdrawn from the left eye in order to have a big pupil and so better to observe the effect of the operation upon the size of the pupil. When the ganglion supremum was exposed a weak faradic current was applied to it, and at once there could be seen marked dilatation of the pupil which dilatation disappeared when the current was stopped. The ganglion at its upper end and the sympathetic nerve coming from it for about 1 cm. below were resected. There was immediately a contraction of the pupil. The intraocular tension which before the resection had been so elevated was now decidedly low, the eye being soft. The result was startling. The operation produced no apparent effect upon the heart's action. In the afternoon of the day of the operation there was slight enophthalmus and also ptosis of the upper lid (left side.) The lowered tension persisted, and so did to a certain extent the contracted pupil. The enophthalmus persisted though the ptosis remained. The vision of that eye steadily improved, and six days after the operation it was 4/10ths. for distance with corresponding improvement for near. The vision of the right eye however had steadily grown worse in spite of the frequent and constant use of myotics and it is now 2/200ths.

**Painless Subconjunctival Injections of the Mercury Salts.**

DARIER, DR. A., Paris. (*Ibid.*) We all know the fondness of Darier for subconjunctival injections in certain eye affections. He has recently made a number of experiments to find some agent which will

lessen the pain of the injection. It was shown that cocain and orthoform were inadequate. The salt of mercury which was employed was the cyanid of mercury (C N Hg). He has found that acoin fulfils the requirements of the case and he uses this formula.

Hydrargcyanid .....	0.01
Sod. Chlorid.....	1.00
Aq. Destil.....	50.0

and to this solution is added a drop of a 1 per cent. solution of acoin. Formerly patients complained of pain for hours after the injection, but with this solution there was no such experience. He reports twelve cases (keratitis, iridocyclitis, etc.) where the addition of the acoin to the solution made the operation practically painless.

**Atribällin (A New Renal Extract.)**

WOLFFBERG, Dr., Breslau. (*Wochenschrift für Therapie und Hygiene des Auges*, 6 Juli, 1899.) It will be remembered that the attention of ophthalmologists was first called to suprarenal extract by Königstein in 1897. Wolffberg mentions the objections (which are substantial) to the suprarenal extract, and for some time past has been experimenting with a view of getting a product which might be free of some of the objectionable properties of the latter. This preparation he thinks he has found in atrabilin. Atrabilin is a bright yellowish, faintly opalescent fluid smelling something like beef extract. This substance was used in a pure state in the experiments on normal and diseased eyes. It is a strong irritant of the sympathetic, as evidenced by the strong contraction of the bloodvessels, spastic widening of the palpebral split and slight exophthalmus. The ischaemia which is produced extends not only to the conjunctival bloodvessels, but also to the deeper vessels. Its action on every kind of corneal vascularization (pannus) is astonishing. Its use is indicated in iritis, iridocyclitis and episcleritis. The product does not dilate the pupil, but this effect may be obtained when desired by the addition of atropin. It has no effect upon either accommodation or intraocular tension. The weakest solution with which the effect can be noticed upon the normal eye is a 10 per cent. solution. In case of functional hyperaemia of the conjunctiva due to eye-strain Wolffberg



has been very successful in relieving the condition by the employment of a 20 per cent. solution. His formula is:

Atrabilin.....	2.0
Acid Boric.....	0.5
Aq. ad.....	10.0

Eyes which are red from either wine or weeping are, to use Wolffberg's words, "rejuvenated" by a few drops of this solution. He has never observed that atrabilin had any anaesthetic properties.

**The Treatment of Some Eye Diseases with Largin.**

PRETORI, HUGO DR., Reichenberg. (*Wochenschr. f. Ther. u. Hygiene des Aug.*, 3 August, 1899.) In connection with the subject of new remedies mention may be made of largin the virtues of which are extolled by Pretori.

The author uses largin chiefly as a substitute for nitrat of silver and he claims that it has none of the irritating properties of the latter. It is used in a 1 per cent. solution which is dropped into the eye every few hours. He reports sixteen cases of gonorrheal ophthalmia where this remedy did admirable work. His conclusions are as follows: Largin may be substituted for nitrat of silver for not only does it act as promptly and as effectively but it is less irritating. It is particularly valuable in blenorrhea of the tear sac.

**The Diagnosis of Diseases of the Corneal Endothelium by Means of Fluorescein and Especially in the Case of Sympathetic Ophthalmia.**

BIHLER, WINFRED, DR., Freiburg, in Br. (*Münch. Med. Wochenschr.*, 8 August, 1899.) Our attention is again called to the value of fluorescein as a means of detecting diseases in certain parts of the cornea. Von Hippel seems to have made the most interesting observations in this connection for he first discovered that even lesions in the endothelium of the cornea could be brought to light. He first established the fact that in the ordinary diffuse parenchymatous keratitis there was no defect in the endothelium (as some have claimed) and on the other hand he has made it equally clear that in keratitis profunda there is such a lesion. He observed also (in this latter condition)



that during the first few days the coloring was most intense, becoming gradually fainter day by day and that it finally disappeared before the corneal clouding showed any marked change. Consequently he concluded that this form of keratitis had its origin in a primary lesion of the endothelium. Bihler, however, found that even in fresh cases of diffuse parenchymatous keratitis lesions of the endothelium could be detected in the earliest stages and he reports three cases. This phenomenon v. Hippel failed to observe. It must be said, however, that in both the varieties of keratitis which have been mentioned the coloring can be seen. He reports a case of sympathetic irritation where he was able, by the aid of fluorescein, to detect implication of the uvea of the sympathizer before any other objective manifestations were present. Where we fear sympathetic ophthalmia we should practice daily instillations of the fluorescein and watch the corneal epithelium. A 5 per cent. solution of fluorescein is used to which is added a few grains of biborat of soda. It is well to put in a drop of cocain before instilling the fluorescein, as thereby the latter is better diffused through the cornea. The endothelium shows the characteristic coloring in plastic iritis, in simple cycilitis. Both v. Hippel and Bihler have succeeded in getting the coloring in cases of acute glaucoma while it was absent in glaucoma simplex.

**A New Biscuit-shaped, Intracellular, Pseudo-Gonococcus  
(Decolorizing with Gram) in the Human Conjunctiva.**

KRUKENBERG, DR. FRIEDERICH, Rostock. (*Klinische Monatsbl. für Augenheilk.*, August, 1899.) The patient from whom this organism was obtained had been suffering for several days with a mild conjunctivitis, somewhat more marked in the right eye. The subjective symptoms were trifling and the objective symptoms slight. The author gives us a very interesting description of the biology of this organism showing the various points of difference between, it and the gonococcus and meningococcus, these being the only organisms with which it might be confounded. He seems to think that the discovery of such an organism in the human conjunctiva should warrant our making more exhaustive examinations in all cases of what are supposed to be gonorrheal ophthalmia and the bacteria

which are found should always be subjected to Gram's method and the cultural properties should be carefully studied. Cases which deviate from the typical picture of gonorrheal conjunctivitis and which show gonococci with cover-slip should be subjected to a thorough examination to see whether the bacteria are really gonococci. If nothing more than a cover-glass preparation had been studied in the case reported the conclusion would have been that the condition was one of mild gonorrheal ophthalmia. The points of difference then consist chiefly in the different cultural properties of the two organisms, hence the importance of subjecting the organisms found to the proper cultural tests and not being satisfied with simply a cover-glass specimen.

**Cerebral Abscess Following Phlegmon of the Orbit.**

SZULISLAWSKI, DR. ADAM, Lemberg. (*Ibid.*) The author mentions the various channels by which such an inflammation could find its way to the brain. It may pass through the superior orbital fissure or an inflammatory thrombosis of either the superior or of the inferior ophthalmic vein with resulting sinus thrombosis may be the intermediary. Finally the periosteum may be the track over which the inflammation travels. There are cases, however, where there is no demonstrable connection between the orbital phlegmon and the meningitis and in such cases we have to deal with a pure metastasis. The cases reported by the author come in this category. The patient was a man who had received a severe blow below the lower lid and at the inner side of the latter. He describes minutely the character of the wound. The wound was treated in the usual way for three weeks and during this time there was more or less of an abundant purulent discharge whenever the wound was irrigated. A small fragment of wood was removed from the wound and from this time on the healing process was rapid. A week later, however, he commenced to have violent headache, fever, and at times there was nausea and giddiness. All this time the eye was free of symptoms and the wound practically healed. He died about two weeks later and the autopsy showed an abscess of the left frontal lobe about as big as the fist. The author's conclusions were

as follows: Phlegmon of the orbit can give rise to metastatic meningitis and also to metastatic abscess of the brain. In cases where general cerebral symptoms appear and where meningitis can be excluded we must think of a metastatic cerebral abscess. If general cerebral symptoms exist without any focal manifestation we may look for the abscess in the frontal lobe on the side of the phlegmon.

**A Case of Conjunctivitis Caused by the Penetration of the Hairs of Plants and Accompanied with the Formation of Nodules.**

MARKUS, DR. CH., Göttingen. (*Zeitschr. für Augenheilk.*, Juli, 1899.) The case reported by Markus is a very rare one and when first seen was thought to be trachoma. The nodules were covered with a secretion which when removed would disclose a hair-like formation sticking up through the conjunctiva. When one passed one's finger over the conjunctiva the sensation was that of a brush. It appeared that the man was in the habit of carrying what the peasants called "Juckpulver" which consisted largely of the hairs of a plant which grew in that region. Some of these had gotten into his eyes with the above mentioned result. The hairs in the nodules were found to be similar to those in the powder. As far as possible these hairs were extracted and the nodules were excised. Cold applications were used and in four weeks the patient was discharged.

**An Operation for Epicanthus.**

KUHNT, PROF. (*Zeitschr. für Augenheilk.*, August, 1899.) Kuhnt suggests the following modification of the well-known operation of von Ammon for epicanthus. The elliptical piece of skin over the bridge of the nose is seized with forceps and pulled forward and in this way we can estimate exactly the height and breadth of the piece to be excised. The outlines of this oval are marked with india ink. It is well to let the upper point of the oval reach about 2 cm. above the root of the nose. An incision is then made following the line marked out with the ink and carrying the incision clean to the bone. We have now the oval piece of skin completely isolated. The adjacent tissue on the sides of the nose are now undermined. The

oval is not excised but its surface is freshened up by the removal of its epidermis and rete malpighii. The loosened tissue on the sides is now brought over the oval and secured above and below with a silver suture. Kuhnt has noticed that in these cases that the bridge of the nose at the root is higher and that the uniting cicatrix is considerably strengthened.

**Metastatic Sarcoma Situated on the Papilla.**

HEINE, DR. L., Marburg, i. H. (*Klin. Monatsbl. für Augenheilk.*, September, 1899.) The tumor of the papilla is supposed to have followed upon the lung metastasis from a sarcoma of the spinal cord. The development of the growth in the eye was unattended with symptoms up to the day of his death. A day or two before death the patient had read newspaper print at about 1-2 m. On glancing into the pupil one could see a tolerably red round disc at the periphery of which the retinal vessels disappeared. On the temporal side this disc was bordered by a white crescent which proved to be that part of the papilla still visible. The patient was *in extremis* and could not be examined by the direct method. The disc was distinctly prominent. It was subsequently shown that the papilla was almost covered by a tumor with over-hanging borders and which extended cone-shaped back as far as the lamina cribrosa. It was exceedingly vascular and punctated in spots by bundles of nerve fibres. It proved to be a sarcoma. In this connection reference is made to the observations of Jackson, Schiess-Gemuseus, Johnson and others, but it is clear that the author's case in some respects differs from these and in consequence may be regarded as unique.

**Successful Transplantation of Sclera and Cornea of a Sparrow Into an Eye Which was Blind from Phthisis Cornea.**

WOLFFBERG, DR., Breslau. (*Wochenschr. für Therapie und Hygiene des Auges*, 24 August, 1899.) The author alludes to the generally unsatisfactory results which have followed corneal transplantation, and reports the following interesting case. It must be said, however, in this connection that while the result has been to restore some useful vision to the patient it is rather soon (scarcely a month) to speak positively of the value of the method. In

several cases where the rabbit's cornea was transplanted the immediate result was gratifying but later the transplanted tissue clouded up and the vision went back to where it was before the operation. It is to be hoped that Wolffberg's case will have a happier issue. The patient was a woman who had lost her right eye from a wound in childhood. Not long since she had been struck accidentally in the other eye and the blow caused a slight rupture of the cornea. Traumatic cataract, luxation of the lens and chronic irido-cyclitis followed. After the extraction of the cataract the scleral wound closed all right but phthisis anterior slowly developed. The pupil was no longer to be seen, and the iris atrophied, and became adherent all around to the shrunken cornea. When concentrated lamp light was thrown upon the cornea in a dark room there was perception but no power of localization. She was willing to risk anything to get some sight. The eye of a sparrow was bisected and that portion in front of the iris utilized for the experiment, in other words the external anterior segment of the eye ball, including a narrow but complete rim of sclera. It seemed irrational to bring this anemic sclera in contact with the anaemic anterior portion of the blind eye so artificial hyperaemia was produced in the following way. The conjunctiva was undermined around the cornea just as in an enucleation. A thread was then passed through the border of the opening and the latter could be closed just like a tobacco pouch. The cornea was now covered with chemotic vascular conjunctiva. On the next day the cornea of the blind eye was trepanned (with a trepan of  $3\frac{1}{2}$  mm in diameter) through its entire thickness. There was no escape of the vitreous. The sparrow's cornea was then introduced and its scleral boundaries were tucked well under the overlapping conjunctiva. The threads remained and the bandage was changed twice daily. The reaction was slight and almost disappeared in three days. Five days after the operation the threads were removed. The transplanted sclera gradually lost its natural opaqueness, and in less than two weeks became as transparent as the cornea. This was one of the most interesting phenomena to be seen in this case. The patient can now go about quite comfortably in a well lighted room.

**A Method of Bringing About Quick and Complete Opacification of the Transparent Lens Without Tearing the Capsule.**

JOCQS, DR., Paris. (*Die Ophthalmolog. Klinik*, 5 September, 1899.) The author speaks of the dangers attending the usual methods of ripening cataracts such as are practiced on immature cataracts and in the operation for high grades of myopia. He offers us what seems a valuable operation in this class of cases. The method is as follows: A Pravaz syringe provided with an exceedingly fine needle is introduced through the periphery of the cornea into the anterior chamber and a few drops of the aqueous are aspirated. The point of the needle is then carried further on until it reaches the lens. The latter is punctured and into it are injected the contents of the syringe. In twenty-four hours marked opacification of the lens may be seen and in two or three days the lens is usually completely opaque. The needle should be unusually fine and its obliquely sharpened end should be as blunt as possible, so that it enters the lens entirely and thus none of the contents of the syringe escape back into the anterior chamber. The needle is introduced obliquely into the lens following the same course as is taken when passing through the cornea. If the needle is not introduced deeply enough into the lens some of the fluid will certainly flow back into the anterior chamber, and in such a case the operation may be repeated in two or three days. The extraction of the lens can be performed any time after the fifth day. The author's experiments were made on dogs and rabbits and were uniformly successful. It remains to be seen how the human eye will behave under such treatment.

**Iodoformin and Iodoformogen in Diseases of the Eye and Its Surroundings.**

HOOR, KARL, DR. PROF., Klausenberg. (*Die Ophthalmolog. Klinik*, 20 August, 1899.) Hoor has been trying like most ophthalmologists and indeed surgeons generally to get a satisfactory substitute for iodoform, the chief objection to which is the odor. Both iodoformin and iodoformogen show their origin though it must be said that the smell is by no means as far reaching as that of iodoform. It appears that Wagner and Kromayer have used

these agents for some time past in dermatological and surgical work in place of iodoform, and with results better than were obtained with the latter. Hoor employed iodoformin and iodoformogen in about seventy-five cases of various eye affections. They both seemed to produce the same effect hence one was not preferable to the other. As compared to iodoform the effect produced by these two agents was not only quicker but more lasting and they can be well substituted for iodoform though it must be acknowledged that their odor betrays their relationship to the latter.

**Subconjunctival Injections of Soluble Substances and their Diffusion in the Anterior Chamber.**

ADDARIO, C. DR., Catania. (*Archiv. für Ophthalmologie*, Bd. XLVIII, Ab. 2.) Although subconjunctival injections have been used not a little in practice still we are more or less in the dark as to the exact way in which they act, chiefly because we are ignorant of the degrees of diffusibility possessed by the various substances used in these injections. Most of the experiments in this direction have been made with the salts of mercury but since very small quantities of mercury are difficult to detect by chemical tests Addario has selected agents which can be injected in larger quantities into the body and hence can be detected more readily. He chose for this purpose ferrocyanid of potash and iodid of potash substances which can be detected chemically in the smallest quantities in the aqueous humor. The following questions he set out to answer: 1st. How long a time after the injection does the substance appear in the anterior chamber? 2nd. At what point of time is the greatest quantity of the substance to be found in the anterior chamber? 3d. How long a time is it possible to detect the substance in the aqueous humor? 4th. How is the diffusion when the injection is made at a point near or more remote from the corneal border?

The experiments were made on rabbits. The injections were made from 3 to 4 mm. from the limbus of the cornea and the aqueous humor was aspirated with a Pravaz syringe specially prepared for the purpose. His results are as follows: Ferrocyanid of potash and iodid of potash when injected into the conjunctiva pass over by diffusion into



the aqueous humor in a period of time ranging from five to ten minutes. The maximum quantity will be found in the aqueous humor in about an hour after the injection. The substance can be detected in the aqueous humor two or three hours after the injection. The more concentrated the solution the less passes over into the anterior chamber. The injection of a solution of ferrocyanid of potash 1.300 and of iodid of potash 1.500 can be detected in the aqueous humor but solutions of 1.1000 cannot be detected. The result of injections made at three or four mm. from the limbus of the cornea vary but little from those made at the equator. Addario in an article in the same number of the Archives (Experiments to Determine the Presence of Sublimat in the Aqueous Humor After Subconjunctival Injections) shows that the quantity of sublimat which is in the aqueous humor must be less than 1.100000 which solution cannot be regarded as having much antiseptic value.

**The Ophthalmoscopic Condition in a Case of Pneumonia.**

FRAENKEL, DR., Chemnitz. (*Archiv. für Ophthal.*, Bd. XLVIII, Ab. 2.) The author describes interesting changes in the fundi of a young man who was suffering with pneumonia. From the commencement of the attack the patient had noticed an increasing disturbance in his vision. A small central part of the field remained clear, but all around this area there was marked indistinctness. Ophthalmoscopic examination showed in both eyes five or six round white specks about  $\frac{1}{2}$  the diameter of the pupil and located right around the macula. Two of these white dots were noticeably elevated. The patient recovered and six weeks later when another examination was made the fundi were found to be normal though the visual indistinctness persisted for a year. Axenfeld and Goh have made similar observations in cases of pneumonia.

**Experience in Treating High Grades of Myopia by Removal of the Lens.**

VELHAGEN, DR., Chemnitz. (*Deutsch. Med. Wochenschr.*, 27 Juli, 1899.) Velhagen must be reckoned among those who are friends of this operation. He analyzes fourteen cases upon which he had operated. The distant vision was influenced as follows: In three cases the vision



remained the same. In three cases it was one and a half times better than before the operation, in two cases it was twice as good, in two cases three times as good, once four times and once five times as good as before the operation. He seems to think that we are not in a position to speak disparagingly of this operation until a longer time has elapsed, say at least 20 years before we can see what influence such an operation exercises upon the anatomical condition of a highly myopic eye whether in other words retinal detachment or choroidal changes may be averted thereby.

#### **Concerning the Holocain Question.**

HIRSCHBERG, J., (*Centralblt. f. Augenh.*, June, 1899.) says, "since I first had my attention attracted to the action of holocain, in June, 1897, I have performed several hundred operations, minor and major, with the help of this agent and have not had a single accident therefrom. Holocain is not only as good as cocain but preferable thereto."

The author prefers holocain for all operations on the eye, including iridectomies, cataract extractions and tenotomies and excepting only enucleation, where, on account of the greater poisonous action of holocain, he has refrained from injecting it into the tissues.

One bottle of his holocain solution having become cloudy, without any apparent reason, he sent it to the discoverer, Dr. H. Tauber, who, upon investigation, concluded that the cloudiness was due to the formation of a silicate by the action of the acid holocain base upon the glass, and recommended that holocain should be kept only in bottles made of a superior quality of white glass.

#### **The Use of Protargol in Diseases of the Eye.**

PRAUN, ED. (*Centralb. f. Augenh.*, June, 1899.) The author gives a detailed report of a long series of experiments with protargol in the treatment of acute and chronic diseases of the conjunctiva, lids, cornea and the lachrymal tract. He treated three hundred cases of acute catarrhal conjunctivitis, with secretion, three hundred cases of chronic catarrhal conjunctivitis, with secretion, eight cases of ophthalmia neonatorum, three hundred cases of phlyctenular conjunctivitis and keratitis, four

cases of trachoma, four of spring catarrh and forty of dacriocystitis besides a small number of other affections of the lids and cornea, including seven cases of serpent ulcer. In all of the cases accompanied by profuse secretion the action of the protargol was compared with that of nitrat of silver by using the former in the right eye and the latter in the left at the same time. In practically all cases the protargol acted much more rapidly and more satisfactorily; the treatment by protargol being generally over in about two-thirds of the time required to obtain the same results by the silver solution. Its use is not recommended in inflammations not accompanied by much secretion. In the treatment of the lachrymal sac and canal the author recommends syringing with a 10 per cent. solution and a solution of the same strength is recommended to be dropped into the conjunctival sac for the inflammations of the conjunctiva. He prefers dropping the solution into the eyes rather than pencilling it on the conjunctiva as it is better distributed and can be easily used by the patient himself. Where there is much swelling of the lids a poultice may be applied by soaking gauze pads with the protargol solution.

In conclusion he states that all that nitrat of silver can do in diseases of the eye is better and more quickly done by protargol, with less danger and the least amount of pain.

#### **Intra-Ocular Galvano-Cauterization.**

VON MILLINGEN. (*Centralb. für Augenh.*, June, 1899.) The writer reports three cases of intra-ocular infection following penetrating wounds of the eye-ball, treated with the galvano-cautery. A 3 mm. broad, flat loop was used to cauterize the wound margin and immediately pushed on into the vitreous chamber where it was moved about while still glowing; the burning being continued from three to five seconds. In every case the inflammatory process was immediately checked, and in two cases excellent vision was secured; the eye-ball was preserved in the third case but a traumatic cataract produced at the time of the accident interfered with the sight.

His only claim for this method of treating the severe intra-ocular infections is that it secures prompt healing and can do no harm.

**The Use of Xeroform in the Treatment of Spring Catarrh.**

Bock, E. (*Centralb. für Augenh.*, Juli, 1899,) reports that during the last month he has treated three cases of Frühlingscatarrh with powdered xeroform, and has been surprised at the excellent results attained, in that the swelling in the corneal periphery diminished in a remarkably rapid manner. All the cases were described as typical in character. The eye was well dusted with xeroform once a day, pain and discomfort were diminished at once and marked improvement noted within a few days.

**The Bactericidal Action of Argentamin.**

HOOR, KARL. (*Centralb. für Augenh.* August, 1899,) gives the results of his experimental work comparing the action of argentamin with silver nitrat and sulphat of copper. He finds that its bactericidal action is more rapid, and that its effects reach more deeply into the tissues than do those of silver and copper. It constricts the blood vessels and diminishes the secretions, and furthermore, the patients prefer its use because it produces less pain, photophobia and epiphora.

Its main advantage, however, in the treatment of trachoma, purulent ophthalmia, etc. lies in the fact of its more rapid action in destroying organisms and its deeper absorption into the tissues.

**Euphthalmin.**

WINSELMANN, DR., Berlin. (*Klin. Monatsbl. für Augenheilkunde*, Mai, 1899.) The ideal mydriatic for diagnostic purposes should possess these properties. 1st. It should produce prompt reaction. 2nd. It should not affect accommodation. 3d. It should not elevate intra-ocular tension. 4th. It should not in every day ordinary use produce toxic symptoms. 5th. It should not produce either corneal or conjunctival irritation. 6th. Its effects should disappear very quickly.

The author then speaks of the well-known mydriatics, atropin, cocain, homatropin and ephedrin. He shows the objections to the first three which we all recognize. He seems to have had no experience with ephedrin so he hardly speaks of this product. His experiments were made with 5 per cent. and 10 per cent. solutions of euphthalmin. In 16 cases he dropped in one drop into the

eyes, in 5 cases five minutes later he dropped in another drop, and in five cases he dropped in five minutes later a third drop. As regards the rapidity and duration of the effect there was no difference between the cases where one drop was instilled and those where three drops were instilled. There was a marked difference however between the effect of the 5 per cent. and 10 per cent. solution. In the latter case the mydriasis was hastened about six minutes. There was invariably some light reaction remaining from 9 to 14 minutes after the maximum dilatation was reached. This light reaction however was so slight as not to interfere with the ophthalmoscopic examination. The accommodation was practically uninfluenced. The near point was advanced in most cases about 2cm. There was no change in the distant vision. The maximum mydriasis lasted generally three hours, and in seven hours the mydriasis had entirely disappeared.

These are the conclusions of Winselmann:

1. There was no marked difference in either the rapidity or the slowness with which mydriasis appeared as compared to the other mydriatics.

2. The accommodation was so slightly affected as not to constitute a factor.

3. Euphthalmin has no effect upon the intra-ocular tension.

4. Toxic symptoms have not been observed.

5. There were no evidences of either corneal or conjunctival irritation.

6. The mydriasis disappeared in a short time.

Euphthalmin is rather expensive.

# ABSTRACTS FROM RECENT FRENCH OPHTHALMIC LITERATURE.

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QUARTER ENDING SEPTEMBER 30, 1899.

## **On Certain Combinations of Paralysis of the Muscles of the Eye, Etc.**

TEILLAIS, Nantes. (*Annales d'Oculistique*, July, 1899.) The case cited in this article, the author states, belongs to the class in which the patient has lost the power of raising or lowering the eyes with loss of convergence but with perfect control over lateral movements. The ocular trouble in this case followed a prolonged attack of diabetic coma. At the time that the patient presented himself to Teillais there was no diplopia, although this condition had been the first ocular sign that had been noticed. The man stammered so much that at times it was impossible to understand him. He had an irresistible tendency to sleep. Moreover he had lost all of his former interest in business, and for the most part answered questions put to him by merely laughing. Three months after the author first saw him he complained of pain in his right arm which was not increased by movement.

Two months later it was noticed that although there was not any apparent paralysis of the right arm the patient was somewhat clumsy when he attempted to use it, and that he preferred if possible to work with the left hand. The radial reflex and the knee-jerk were both increased on the right side. Two causes were suggested for the symptoms: syphilis and diabetes.

## **Tonic Spasm of the Ciliary Muscle in Children and the Value of Skiascopy in the Examination of the Atropinized Eye**

LAGRANGE, Bordeaux. (*Annales d'Oculistique*, July, 1899.) By means of a careful study of the results obtained

in an examination of the eyes of forty-five subjects Lagrange arrives at two conclusions:

1. "That in the dark room almost as much as during the employment of the optometer, children whose eyes are not under the influence of atropin are subject to a tonic form of spasm of the ciliary muscle which alters the objective mensuration of the refractive error as measured by the skiascope.

2. "That skiascopy performed upon a subject whose pupil is well dilated by a complete dosage of atropin gives results of relatively greater precision in spite of the fact that the peripheral portions of the dioptric surfaces are allowed to enter into consideration."

In the discussion of the subject the author emphasizes the fact that in using the skiascope under these conditions the aberration of sphericity of the crystalline lens, upon which Tscherning and others have dwelt with much emphasis, is frequently over corrected. Whether this over correction is accomplished by the cornea or not is, he says, not as yet determined, but the mere fact that it is so, destroys one of the arguments that has been brought forward against estimating refraction under a mydriatic.

#### **Orbital Heteroplasty. A Clinical and Experimental Study.**

VALUDE, Paris. (*Annales d'Oculistique*, July, 1899.) Based upon experiments made on rabbits and as the result of several operations upon human subjects, Valude has been led to the following conclusions:

Organic substances when introduced into the orbital cavity have not proven satisfactory, the results obtained with sponge-grafts being but temporary. This he says is not the result of absorption but is due to a degeneration of the sponge-tissue, the penetration of the meshes of the sponge by the living tissue being followed by a degeneration of the sponge itself. On the other hand, he believes that the introduction of globes of metal or glass seems to give the conditions that are the most favorable to the success of an operation for heteroplasty. If the stitches are made close together and if they grasp the tissues sufficiently deeply the wound will unite well. The volume of the stump thus made he has found remains constantly the same.

**New Process of Implanting Glass Globes in the Orbit.**

OLIVER, Philadelphia. (*Annales d'Oculistique*, July, 1899.) In this operation Oliver first frees the conjunctiva from the globe at the corneal limbus. He then dissects back the four recti muscles, but does not free them. A single suture of catgut is next loosely passed through the two lateral muscles from one side close to their points of insertion in the sclerotic leaving a broad open loop. The superior and the inferior recti muscles are connected in the same way. The four muscles are then freed from their ocular attachments. The globe is enucleated and the cavity of Tenon's capsule carefully cleaned. A glass globe of a diameter equal to about three-fourths the size of the eyeball is carefully inserted into the position previously occupied by the eyeball. The freed and connected ends of the two lateral muscles are resected and drawn together and tied. The vertical muscles are treated in a similar manner. The conjunctival wound is elongated into a horizontal lozenge and closed by a row of silk sutures. The operative field is carefully cleansed and iced compresses are kept constantly applied from twenty-four to forty-eight hours. With asepsis, no undue violence, and thorough cleansing of the parts during the operative procedure, there is not any reaction and the stump is ready for the insertion of an artificial eye in less time than it is after the old method of enucleation. From a cosmetic standpoint the method yields results that are as good as those that are obtained after evisceration.

**New Considerations upon the Treatment of Infectious Ulcers of the Cornea.**

BOURGEOIS, Reims. (*Annales d'Oculistique*, July, 1899.) Bourgeois emphasizes the fact that much harm may be done in treating infectious corneal ulcers if the cornea be tampered with too much. Should there be any sign of an inflammatory condition of the lacrimal canal or sac the lacrimal tissues should be thoroughly curetted by way of the inferior canaliculus if possible, or through the skin if there is much swelling of the sac.

In the latter case the sac should be cauterized by means of a thermo-cautery. The canal should always be cleansed with a one to two thousand strength solution of cyanid of mercury. The ulcer should be first cleansed



with a concentrated solution of boric acid and then cauterized with an olivary tipped thermo-cautery of Rochon-Duvigneaud, or better still, by a hot air blast which can be applied by means of a small syringe such as is used by dentists. If the amount of pus in the anterior chamber fills but about one-fourth of the chamber it should be allowed to remain to be absorbed. If the pus should increase till the chamber is about half full it should be evacuated and the chamber cleansed with a solution of sterilized salt of the strength of one and one fifteen-one-hundredth parts of salt to ninety-eight parts of water. This solution should be heated to about the temperature of the body. Iodoform should be then dusted between the lids and the dressing applied. Constitutional remedies must be employed as required and all local sources of infection should be removed.

#### Paroxysmal Hysterical Weeping.

FROMAGET, Bordeaux. (*Annales d'Oculistique*, July, 1899.) Fromaget presents to us a new phase to that many sided disorder, hysteria. His patient was a woman of twenty-six years of age, by occupation a tailoress. Her father was nervous and irascible and suffered from a syphilitic form of irido-chorioiditis. The mother was of a calm disposition and in apparent good health. The girl's previous history was good. One afternoon, after an outburst of temper, the patient found that her eyes became and remained red. The next morning the lids were agglutinated. When seen at the Author's clinic two days later the case presented the symptoms of an ordinary attack of catarrhal conjunctivitis and as such was treated. The whole gamut of antiseptics and astringents that are usually applied was run without success. A simple hypermetropic astigmatism of one diopter with the rule was corrected but without other result than giving a visual acuity of one-third of normal. Two months later the disease took the curious turn mentioned in the title,—that of paroxysmal attacks of epiphora. These occurred at intervals of from ten to fifteen minutes apart, and at times kept the eyes red throughout the day. At night the attacks ceased. The trouble was always binocular. All of the organs of the body were in an apparently normal condition except for certain functional nervous symptoms such as disseminated



zones of hyperesthesia on the hands and fore-arms associated with absence of the pharyngeal reflex, and anaesthesia of the nasal mucuous membrane of the conjunctiva and the cornea. Color-vision was normal. The visual fields were concentrically contracted to about twenty-five to thirty degrees of normal. The fields of vision for red were as wide as those for blue.

**Primary Tubercular Periostitis of the Supero-External Margin of the Orbit.**

MAZET, Marseilles. (*Recueil d'Ophthalmologie*, June, 1899.) Mazet's patient, a child of three years of age, born of healthy parents, was operated upon twice, once for the relief of a periostitis. At this time the crystalline lens was in a healthy condition. The patient was again operated on about five months later for the cure of an osteitis with sequestrum formation. From a study of the case the Author deduces the following conclusions.

Although orbital tuberculosis may very often be of osseous origin yet on the other hand, it may at times arise in the periosteum of the bone; primary tubercular periostitis therefore really existing.

The cause of osteo-periostitis of the upper margin and vault of the orbit cannot always be traced to an affection of the frontal sinus; on the contrary the latter type of infection may be secondary to the former.

The proper treatment in such cases is surgical and this should be thoroughly done. During the procedure as much as possible of the diseased tissue should be removed by means of a curette, and any remaining portions should be treated with antiseptics or caustics.

**The Corneal Suture as a Means of Oblviating Certain Accidents which may Follow the Extraction of Cataract.**

PIERRE, Dolbeau. (*Archives d'Ophthalmologie*, June, 1899.) Dolbeau believes in suture of the cornea after the operation for cataract in order to arrest post-operative hemorrhage, and to fix the corneal flap in proper position. For the latter result he recommends that the sclera should not be pierced unless necessary, the method of choice being to pass the suture through the conjunctival membrane alone on the proximal side of the wound. On account of its ready absorption he has found that catgut is the best material that can be employed for the suture.

**Leuco-Sarcoma of the Choroid.**

LOPEZ and CARVALLO. (*Recueil d'Ophthalmologie*, June, 1899.) Lopez reports the first case of this rare affection of the eye which has come to his personal clinical experience in a record of more than five thousand patients. The growth was watched for over a year's time. Finally when it had become painful and had destroyed vision the eye was enucleated. After a period of three years following the operation there had not been any return of the neoplasm.

The diagnosis between tumor of the choroid and detachment of the retina was made largely by means of the appearance of the vessels of the growth. Upon removal of the eye the neoplasm was found to be so large as to almost fill the vitreous chamber. An examination of the tumor-mass by Carvallo proved it to be an example of nonpigmented leuco-sarcoma.

**Tuberculosis of the Lacrimal Sac.**

ROLLET, Lyons. (*La Clinique Ophthalmologique*, July 10, 1899.) The patient was a girl of fourteen years, who had been treated seven years previously for lesions of the bones of the feet with suppurative cervical adenitis and cutaneous gummata. Two months before coming under the care of the author she noticed a swelling in the region of the lacrymal sac of the right eye this being accompanied with epiphora. At the clinic a diagnosis of chronic empyema of the sac was made. The conjunctiva and the nasal fossae were normal. At this time it was impossible to catheterise the sac. The patient was etherized and the sac was extirpated. The surrounding tissues were cauterized, care being taken not to injure the overlying skin. The sac was closed with two sutures and covered with a layer of gauze. On the fourth day the sutures were removed and the dressing was changed. There was no pus. Union was complete by the end of the tenth day. Two weeks later there was a sudden aggravation of the adenitic condition accompanied by an attack of phlyctenular kerato-conjunctivitis. This subsided in nine days' time yielding to an injection of biniodide of mercury. The sac was found to be filled with a fungous-shaped growth but did not contain any pus. Inoculation and culture-experiments proved the trouble to be tubercular in nature.

The author believes that if more cultures were to be made in cases of chronic dacriocystitis tuberculosis of the lacrymal sac would be found to be less rare than is generally supposed to be the case. He considers the presence of adenopathies in such cases to be of greatest diagnostic value. In such cases he recommends the removal of the sac, this procedure to be followed by cauterization if the edges of the wound have become inoculated.

**Monolateral Hemorrhages of the Vitreous Humor with Cures and Relapses; Commencing at the Age of Sixteen.**

JACQUEAU, Lyons. (*La Clinique Ophtalmologique*, July 10, 1899.) The case was that of a man twenty-eight years of age, who had had several attacks of, at first partial, but later, complete blindness of the left eye. Cure was affected in each exacerbation in two or three days' time by the use of hot foot baths. That this simple measure was of actual benefit was proved by the fact that if this therapeutic measure was delayed the cure was retarded. Examination of the eye between the attacks failed to show anything abnormal. Vision for distance equalled five-sevenths of normal. During the attack the vitreous chamber became filled with black floating bodies. There was no history of syphilis, rheumatism or alcoholism. The urine did not contain any albumen, but at all times there was a marked excess of urea and phosphates.

The author has already called attention to the presence of these substances in excess in two cases of hemorrhage into the vitreous chamber. Crises of polyuria he says are sometimes found to precede such exacerbations. Tabulated statistics of fifty-three cases of hemorrhage into the vitreous humor collected by him show that: 1, these attacks are most frequent between the ages of twenty and thirty years, practically never occurring between the ages of forty to fifty, being again found in subjects of over fifty years of age; 2, in early life the disease is usually bilateral (cause general), while in later life, it is generally monolateral, (cause local, arterio-sclerosis); 3, in early life males are more subject to the disease than females, while in later life, the relative proportion between the two sexes is about equal.

**An Experimental Study of Traumatic Cataract.**

OBARRIO, Berlin. (*Annales d'Oculistique*, August, 1899.) For his experiments Obarrio employed both rabbits and cats. In some instances he incised the anterior capsule of the crystalline lens only; in others, he cut the posterior capsule only; while in a third grouping, he operated upon both the anterior and the posterior capsules. His conclusions are as follows:

1. Wounds of the capsule of the crystalline lens, whether anterior or posterior are followed by cicatrization.

2. After such cicatrization the crystalline lens may remain transparent; usually however it slowly becomes completely opaque.

3. This lenticular opacity occurs in spite of the cicatrix which makes a point of filtration rather than one of protection.

4. Although the lens material becomes opaque after cicatrization of the lenticular capsule, it is not absorbed.

5. A solution of the continuity of the lenticular capsule of such dimensions that its closure is prevented by the swollen masses of the lens material is necessary in order that the lens matter may be absorbed.

6. A disarrangement in the normal direction of the fibres of the crystalline lens if they are not separated is not sufficient to produce a loss of its transparency, but, should a space exist between the fibres caused by a massing of the products of degeneration of the cellules, an opacity will occur.

7. The process of formation of the capsular cicatrix is not yet fully understood, but, contrary to the opinion of others, it must be considered that it is produced principally through the medium of the fibrinoblasts as can be seen in other parts of the body.

**A New Registering Perimeter.**

PARISOTTI. (*Annales d'Oculistique*, August, 1899.) Parisotti claims for his instrument that it is noiseless during its movement, that the registering is done by a pressure on a lever which is manipulated by the patient (thus making an exact record), and that as the surgeon is hidden from the patient by a large screen, his own person and clothes do not enter into the examination as disturbing

factors. Working drawings and two photogravures of the instrument itself accompany the description.

**A Note In Regard to a Rare Type of Epithelial Growth Situated on the Upper Eyelid of a Woman.**

VIEUSSE. (*Recueil d'Ophthalmologie*, August, 1899.) The growth mentioned in this article had, in two months' time attained a size of one and one-half centimeters by one centimeter. After removal it was found to be composed of an external envelope of connective tissue the fibres of which did not completely encircle the mass, but embraced several lobes of various dimensions. Each lobe was surrounded by fibrous tissue and was either hollow or else filled with a mass of degenerated tissue. Although the tumor was of a soft consistence both the author and Audry to whom it was referred for study, considered it to belong to the class of so-called cutaneous horns and not to the true type of epitheliomata.

**A New Case of Purulent Ophthalmia in an Adult, Cured by the Employment of a Concentrated Solution of Permanganat of Potash.**

VIAN, Toulon. (*Recueil d'Ophthalmologie*, August, 1899.) Vian's method of treatment consisted in the cauterization of the conjunctiva of the eye-lids with a ten per cent. strength solution of permanganat of potash and to employ cataplasms charged every two hours, in association with hot lotions of boracic acid. In less than nine days' time the discharge from the right eye had ceased, though a small corneal ulcer had formed. The cauterizations were discontinued and antiphlogistic treatment was applied with success. In the left eye the disease was checked within three days' time after the institution of the treatment.

**A Note Upon Entropion and Consecutive Trichiasis of the Lower Lid in the Aged.**

MALGAT, Nice. (*Recueil d'Ophthalmologie*, August, 1899.) For the relief of this condition Malgat proposes the removal of three or four cilia by electrolysis at a sitting until all the eyelashes have been removed, and the irritation stopped. After a complete application of the method it will be found that the entropion is relieved for a period of from one to two months' time or even longer.

His reasons for making use of the method are: 1. It is inoffensive; 2. It gives good immediate results; 3.

It is not painful and can be easily done; 4. It is satisfactory to the patient; 5. It avoids an operation which is not always successful, and which, if a general anesthetic be employed, is not absolutely free from danger.

**An Additional Case of Odontalgia Dependent Upon Insufficiency of the Internal Recti-Muscles.**

NEUSCHÜLER, Turin. (*Recueil d'Ophthalmologie*, August, 1899.) In describing this case Neuschüler lays stress upon the fact that owing to the obscure origin of such cases they are probably frequently overlooked, and consequently are not as rare as is generally supposed; when discovered it usually being by accident. The author's patient, who was a medical student, noticed that after prolonged application of his eyes for near-work he suffered from a pain in the orbit which would finally spread to the teeth, and become so severe as to necessitate a cessation of close work. Glasses had failed to relieve the trouble. The eye-grounds were found to be normal the right eye being emmetropic. The left eye was myopic to the extent of one and one-quarter diopters. There was a tendency for the eyes to waver when they were fixed upon a near object. Prisms of two degrees strength, bases in, were ordered for close work, with the result that the dental pain was relieved.

**The Role of the Toxins in the Production of Conjunctival Inflammation.**

MORAX and ELMASSIAN, Paris. (*Annales d'Oculistique*, August, 1899.) By means of continuous instillations into the conjunctival sac (instillations at intervals of two or three minutes for two or more hours' time) the authors found that it was possible to produce in rabbits an experimental conjunctivitis with either living or dead cultures of gonococci, the bacilli of Weeks, diplobacilli, and staphylococci, and with the filtrates of these cultures.

None of the organisms experimented upon were ever found to multiply in the conjunctival sac of the rabbit, and it is for this reason that with the conditions under which inoculations are ordinarily attempted (deposits of cultures or of exudates from human conjunctivæ into the conjunctivæ of animals), definite results are never obtained. The experiments recorded in this paper, though, prove, that considering the bactericidal properties that are possessed

by the ocular mucus membrane of the rabbit against the bacteria mentioned above, that organ is nevertheless sensible to the toxins that are produced by them, and that the membrane reacts in a manner which is comparable to the human conjunctiva.

It was found that these toxins are very slow in penetrating the membrane. In consequence, they believe that there must be a prolonged contact between the poison and the conjunctiva itself in order to produce a characteristic reaction. Moreover, they have ascertained that the reaction is not immediate, and that there is always an interval of at least two or three hours between the commencement of the instillations and the appearance of the reactionary signs. Their findings show that for the toxin of diphtheria these periods are never less than from twelve to twenty hours. It is comparable they say to the latest period following the injection of jequirity; but whereas the reaction in this latter drug appears soon after a single drop of the agent has been placed in contact with the conjunctiva, it requires a contact of from eight to ten hours' time with a healthy membrane in the case of the diphtheria toxin, or shorter if the membrane has been previously altered. There are therefore differences in the mode of appearance of these reactions, and the conditions under which they are produced will so vary as to permit of a differentiation between the different toxins (and above all separate their reactions from those that are produced by caustics, alkalies, and acids) and physical agents such as heat.

In addition, they have determined that the reaction which is produced by the contact of the toxin against the mucus membrane may persist for some time afterward (as is the case with the diphtheria toxin, abrin, and snake-poison) or it may cease in a brief period of time. This latter result, they assert follows the instillations of the diplobacillus and the bacillus of Weeks. The reaction following the instillation of the gonococcus, although not very persistent is more so than with the other two agents. The toxins which are elaborated by these three agents are much feebler in reactions and are more limited in duration than those of the diphtheria bacillus. They have found that while in the case of the last named material the



reaction may last forty-eight or more hours after all traces of the bacillus have disappeared, yet with the other three germs the reaction is so closely connected with the presence of the germ-material that it ceases in a very few hours' time after the disappearance of the organisms from the secretion.

They state that although there have been efforts made to compare the absorption by mucous membranes to the phenomena of dialysis, and that the theory is very seductive, yet they consider that the matter is much more complicated than it at first was apparent. They believe that certain cells are no different to these toxins, whereas others exhibit a selective power. They are of the opinion that more facts are needed before any general laws can be framed.

**A Case of Typical Serpigenous Ulcer with an Anatomic Examination of the Same.**

DRUAUT and PETIT. (*Archives d'Ophthalmologie*, July, 1899.) The bacteriologic examination of the ulcer in this case revealed the presence, both in the pus of the hypopyon and in the cultures, of a diplococcus which was very closely analogous to the pneumococcus of Talamon-Fraenkel. It was arranged in the form of many short chains and was mixed with the simple varieties of diplococcus. These cocci were not found on the surface of the ulcer, but were noted as being abundant in the tissue at both ends of the sections; in which situations they were arranged either in close compact groups consisting of the germs alone, or were mixed with leucocytes. At the edge of this zone the pneumococci were arranged in chains.

The principal feature of the histologic examination was the presence of a covering of epithelium over the whole surface of the ulcer which had been steadily progressing when the eye was enucleated. The composition of this, the authors considered as being more of the nature of debris than of new cells. This view led them to the belief that the reason that so many cases of dacryocystitis have no effect on the cornea is that the corneal cells possess great resistive power against the germs.

**Antiseptic Injections and Washing of the Anterior Chamber.**

FAGE, Amiens. (*Archives d'Ophthalmologie*, July, 1899.) Fage states that his study of this method of treatment of



ulcers, post-operative infection, and diseases of a like nature, has led him to expect very encouraging results. Twenty rabbits and eleven human subjects form the number of cases that have been experimented upon. No detailed history of any of them is given.

The author considers that the injections should be limited to those diseases that are characterized by formation of a hypopion and an infectious irido-chorioiditis. He has found that if the hypopion is very large or if there be post-operative suppuration with commencing panophthalmitis, antiseptic douching of the anterior chamber is the most effective. In some cases a counter opening to allow a freer flow of the antiseptic solution increases the benefit that has been previously derived. The solutions used were those of boric acid and cyanid of mercury. Experience has shown him that pus rarely appears in the anterior chamber after the application of the douching, while the patient begins to experience marked relief from the symptoms of the disease in twenty-four hours' time after the institution of the treatment. He says however that other methods should be combined with those that are under consideration in the article.

#### **Bilateral Iritis of Malarial Origin.**

PECHIN. (*Recueil d'Ophthalmologie*, July, 1899.) A case of double iritis with the exacerbations following malarial attacks is reported by Pechin. The right eye was affected after an attack of intermittent fever, and five or six years later the left eye suffered a similar disturbance. The interesting part of the case is that the other portions of the eyes had apparently escaped. For explanation the author offers the fact that while the capillaries may be filled with the plasmodia the larger vessels may be free from them.

#### **Several Cases of Essential Hemeralopia Treated by the Ingestion of Sheep Livers,**

TRAUTAS. (*Recueil d'Ophthalmologie*, July, 1899.) In ten cases of the essential type of hemeralopia that were treated by the internal administration of liver tissue associated at times with fumigations of liver material rapid cure seemed to be obtained, some of the cases being of extreme gravity. In one instance in which other methods of treatment had been ineffectual and the patient had

become blind through a keratomalacia, the "hepatotherapy" as it is termed, cured the patient of both the hemeralopia and the keratomalacia.

While it is certain, the author says, that this mode of treatment is valuable the cases being too numerous and too varied to ascribe the cures to chance, yet he fully recognizes the difficulty of offering any adequate explanation of the action of the drug, the best being that it produces a regeneration of the visual purple. He believes that it is on account of this difficulty that the treatment has been formerly unused, but thinks that now that opotherapy in general is being restored to its proper place, the explanation of hepatotherapy against the condition (which is frequently of hepatic origin) finds less incredulity in the medical profession than formerly.

**The Luminous Intensity of Colors in Total Achromatopsia of Hysteria.**

OBARRIO, Berlin. (*La Clinique Ophtalmologique* August 10, 1899.) Obarrio has found that in total hysterical achromatopsia the patients are in a condition to be able to make a proper mental abstraction of the colors. He also says that the luminous intensity of the colors seen by such subjects is the same as it is for healthy individuals.

**On the Symmetry of Our Eyes and the Value of a Uniform Notation of their Meridians.**

KNAPP, New York. (*La Clinique Ophtalmologique*, Sept. 10, 1899.) Knapp urges the adoption of a uniform method of notation for the meridians of the eye in order that prescriptions for lenses, etc., may be rendered intelligible and the same to opticians the world over. He suggests that on account of the definite symmetry of the eyes, of which he gives statistics, that the mark for the zero degree should commence at the nasal sides of the horizontal meridians of the two eyes, and that the notation should proceed from these points upward and outward.

**Chrysophanic Ophthalmia.**

ANTONELLI, Paris. (*La Clinique Ophtalmologique*, July 25, 1899.) Antonelli suggests the name given in the title of the article for this condition instead of that of chrysophanic conjunctivitis, as in each of two attacks of the case studied by him the conjunctival symptoms were

relegated to the background by the prominence of other and graver signs (keratitis in one instance, and iritis in the other). In both of the attacks the symptoms seemed to have been caused by local irritation and not by any general absorption. Cocain, atropin, and solutions of boracic acid effected a cure. The first attack was in the left eye of the patient, and the second was in the right eye.

**Cerebral Disturbances Consecutive to Cataract Operations.**

ALOIS, Moulins. (*La Clinique Ophtalmologique*, July 25, 1899.) Valois divides these types of accidents into two classes; those in which there is merely a mild delirium, and those in which the patients become uncontrollable and maniacal. The difference he states is merely one of degree more than of kind. He has learned to avoid these troubles by allowing the patients to have the unoperated eye free after the first twenty-four hours. The eye that has been operated on is kept bandaged for five days, the primary dressing being fastened down with collodion under a bandage. This method he states prevents the patient from getting his fingers into the field of operation.

**A Complete and a Rapid Method of Opacification on the Crystalline Lens Without Tearing the Capsule.**

JOCQS, Paris. (*La Clinique Ophtalmologique*, August 25, 1899.) The method described by Jocqs has not as yet been attempted on the human subject, but it has been done upon the lower animals where it has succeeded thoroughly. The *modus operandi* is to pierce the cornea with the short bevelled needle of a Pravaz syringe. As soon as the point of the needle is well situated in the anterior chamber the piston of the syringe is withdrawn slightly and two or three drops of the aqueous humor are removed. This done, then, without withdrawing the needle, it is pushed obliquely into the lens penetrating the lens substance almost to the posterior capsule. The aqueous humor which has been previously forced into the syringe is expelled into the lens tissue and the syringe is withdrawn. He has found that in from three to five days' time the lens may be removed either by extraction or by suction.

# ABSTRACTS FROM RECENT SPANISH OPHTHALMIC LITERATURE.

BY ALBERT B. HALE, M. D.,

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Quarter Ending September 30, 1899.

## **Hysteria Affecting the Eye.**

FERNANDEZ, SANTOS, (*Anales de Oftalmologia*, October, 1898.) relates the histories of 14 cases of eye symptoms due to hysteria, out of 33,000 patients seen by him during 24 years of practice. His resumé is as follows: Of the 14, twelve were women, two men. Four were between 13 and 16 years, two 18, two 19, five from 20 to 28 years. One was 56 years old, who had a transient ptosis. One was attacked with amblyopia, five with amaurosis, eight with ptosis, one with atrophy of the papilla and with paralysis of external eye muscles. Cases 5, 6, 8, 9 and 12 had total amaurosis, though hysteric amaurosis is usually monocular.

The analysis shows that purely hysteric symptoms manifested in the eye are rare, and that, since the introduction of modern diagnostic methods such as the ophthalmoscope, perimeter and test lenses, the decrease has been marked, compared to the number mentioned by practitioners of years ago. Fernandez finds two cases of hysterics; those in whom hysteria is general, with profound depression of nervous system and of the eyes as well; those in whom only one organ or portion is attacked, in his own series this being the eye. These cases belong to the latter class, as only eye patients were seen in his consulting room. Undoubtedly the neurologist would find in general hysterics many symptoms referring to the eye, but associated with more marked characteristics of the disease.

The cases are given in detail.

## **Operations for High Myopia.**

TRONCOSA, URIBE (*Anales de Oftalmologia*, November,

1898), reviews the literature of operation for high myopia, and gives one case of his own as follows:

J. H., girl of 21 years, no myopic antecedents, had had poor vision always.

V.OD = 1/6 with — 23.ODs  $\subset$  — 3.ODc ax 60°

V.OS. = 1/3 with — 20.ODs,

but such strong lenses could not be worn, and she had to be content with — 15.ODs and — 13.ODs. A discission was made in the right eye, followed by a second 12 days afterward, which produced so much reaction that a linear extraction was performed three days later, with success. Forty days later the secondary cataract was discided, and vision resulted thus, without lenses, OD, 1/6; with lenses, — 1.50 Ds  $\subset$ . — 1.50Dc 180 1/3, at which everybody was well pleased.

ALONSO, A., San Luis Potosi (*Anales de Oftalmologia*, December, 1898.), also reports one case, as follows: Miss G., 20 years old, consulted him for a progressing myopia of three years standing. No antecedents myopic. V. in each eye, with — 20.ODs, was OD 1/10, O.S, 1/8. The right eye was operated on by discission, followed in seven days by linear extraction without iridectomy. Capsulation was performed after fourteen days. The result was fine; the eye became nearly emmetropic. V. without lens 1/5 and she could read easily at 25 cm. with + 4.ODs.

#### **Amblyopia of the Right Eye from Traumatism at the Cortical Center for Vision.**

GONZALEZ, LOSI, Leon (*Anales de Oftlamologia*, December, 1898.), thinks the case narrated below is an addition to the evidence we already possess of the localization of cortical foci, in this instance that of the visual center at the occipital lobe.

Pedro D——, 35 years of age, laborer, with a healthy history, while drunk on July 9, 1898, suffered an injury in the left parieto-occipital region, cutting the scalp about four centimeters in extent, but leaving the bone—as he says—intact. Exactly outlined, the spot of the injury may be shown by drawing a line from the (left) external orbital apophysis backward above the ear; upon this line erect two perpendiculars, one ten centimeters from the apophysis and six centimeters high; the other three centimeters be-

hind the first and three centimeters high; by uniting these perpendiculars we draw a line exactly over the site of the cut. Admitted to the hospital he received the best surgical treatment, and showed no mental symptoms at all. Dr. Gonzalez saw him first on August 24, when he said that he had suffered from amblyopia of the *right* eye since the third day after the accident, but that before this date he had seen perfectly with the eye. This amblyopia was steadily increasing. Examination showed a healthy globe, with all muscular movements (including pupillary reflexes) normal, but a limitation of the visual field to central vision, even this being extremely indistinct. The ophthalmoscope showed no changes whatever. The left eye and its vision were normal. There were no subjective symptoms.

G—— thinks that there can be no doubt of the causal relation between the trauma and the amblyopia, because in the differential diagnosis that need be made between hysteric amblyopia and traumatic amblyopia, we can exclude hysteria, since there are no associated stigmata of that disease. Moreover, this is a crossed amblyopia, as we should expect from an injury but not from hysteria. Unfortunately the patient could neither read nor write, so that word-blindness could not be examined. It cannot be alcoholic amblyopia, because the central vision is preserved in this patient. As the lobar area for vision lies directly under the injured cranial area, the diagnosis would be a concussion of the brain in this spot, severe enough to affect the function, but not enough to break the outer plate, while the inner table might have been fractured. The patient has so far refused an operation (trephine), so that its probable results can only be guessed, although it is not unlikely that a progressive atrophy may later on confirm the diagnosis.

# ABSTRACTS FROM RECENT DUTCH OPHTHALMIC LITERATURE.

BY

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Quarter Ending September 30, 1899.

## **Tuberculosis of the Eye.**

STRAUB. (*Weekblad v. Geneesk.* May 27, 1899.) In discussing ocular tuberculosis before the Amsterdam Medical Society, spoke at some length concerning the milder grade tubercular manifestations in the ocular sphere as contrasted with the pathologico-anatomic findings now so familiar to most workers. First to be recognized among the milder forms of invasion was tuberculosis of the conjunctiva which is generally benign and heals promptly after curetting, albeit Straub has seen one malignant case. Swelling of the preauricular glands is of diagnostic importance.

Tuberculosis of the cornea has been seen several times, but is more difficult of recognition.

Tubercular iritis is more frequent, sometimes suggesting nodules in its clinical outworking, although tuberculosis is always to be borne in mind when nodules are present. Of 2 cases studied by S., one occurred in an 18 year old boy, otherwise apparently healthy. In the iris tissue were to be seen nodules exactly like those obtained by tubercle inoculation of rabbit's eyes. Atropin and all the fresh air possible made up the treatment under which, notwithstanding



a considerable hemorrhage into the anterior chamber, healing with one small synechia took place in 2 months. The second case was that of a man who had been the subject of iritis for 2 months, showing, at the time of Straub's first examination, some synechiæ and also nodules at the pupillary margin and in the body of the iris tissue. Despite the absence of a syphilitic history, mercury, potassium iodid, and quinin salicylat were given—all however without result. Atropin then brought about slow convalescence, and after a few months the patient was discharged with V. of  $1/2$ . Later, tubercular iritis unfolded its features in the fellow eye, but yielded quickly to atropin without synechial formation. Unhappily, glaucoma developed subsequently in this eye and, in spite of iridectomy and sclerotomy, the eye went on to blindness whether as a result of the atropin or as secondary to tuberculosis of the ciliary body it was impossible to say. Tuberculosis of the ciliary body is very hard to diagnose. Bulging of the iris at the angle of the anterior chamber may sometimes assist in the diagnosis. Straub showed an eye with tuberculosis of the whole ciliary body and infiltration of the adjacent sclera. He looks upon tubercular cyclitis and scleritis as clinically identical processes and reports cases of tuberculosis of the sclera occurring in 10 and 24 year old males, and 20 and 26 year old females. They were identical in the exhibition of scleral or episcleral tuberculous nodules rebellious to internal remedies and yielding in each case to excision and surgical aftertreatment. In one other case, exhibited at the meeting by Straub, a 6 year old girl showed 2 episcleral nodules with patches of disseminate choroiditis visible ophthalmoscopically in the region of the nodules only, and reminding strongly of disseminate choroiditis. In diagnosing such deposits in the choroid, syphilis is however always to the front in etiologic considerations as chronic tuberculosis of this membrane is exceedingly rare.

#### **The Apparent Accommodation of Aphakic Myopes.**

SCHOUTE, Amsterdam. (*Weekblad v. Geneesk.* June 3, 1899,) does not accept Thier's theory in explanation of the fact that myopes can apparently accommodate after extraction of the lens. According to Thier *the longer the cone*



*of rays entering the eye, the smaller will be the circle of dispersion.* If this were so these dispersion circles would be too small in myopes to make anything like accommodation possible. As a matter of fact, calculation shows these circles to be larger in myopes than in emmetropes or hypermetropes because the rays intersect much farther in front of the retina in myopes than they cross behind the retina in hypermetropes, a fact that is strongly against Thier's theory, Schoute concludes:

(a.) That with the same pupillary width the dispersion circles are much larger in the aphakic myope than in a corresponding emmetropic eye, the dimensions of the circle being in the first case 104.66 micromillimeters and in the second 64.97 micromillimeters.

(b.) That Donder's explanation of the phenomena on the basis of corneal astigmatism is much nearer to the facts.

(c.) That, if good vision at varying distances occurs in aphakic myopes in the absence of corneal astigmatism some other explanation must be sought out.

#### **Corneal Rupture with Radial Rupture of the Iris.**

SCHOUTE'S report. (*Weekblad v. Geneesk.* Aug. 5, 1899,) concerns a 42 year old carpenter, who while chopping, was struck in the right eye by a piece of flying wood. Patient had little if any inconvenience with the eye. Two days later examination showed slight pericorneal injection and a small rupture in the cornea 2 mm. from the upper outer limbus. Directly behind this in the iris tissue lay a small radial rent. There was no iris prolapse nor iridodialysis; the sphincter iridis was intact; the pupil oval, smaller than its fellow, and normal in its reactions. The lens was perfectly clear and the fundus normal. V. equalled 6/12. The ophthalmometer showed As.0.50, max. 30° nasal. Refraction E. An occlusive bandage constituted the whole treatment.

*Three weeks later* V. equalled 6/6. Pupil was 2 mm. in diam. Trans-illumination shows a red reflex through the iris slit, which latter begins about 2½ mm. from the upper outer pupillary margin and extended radially up and out for about 1 mm.

*Eleven months later.* "No corneal As. (ophthalmom.) neither lenticular (retinoscope). Pupil  $1\frac{3}{4}$  mm. regularly round. Slit in iris unchanged and gives red reflex of same intensity as that of the pupil. However when the pupil is carefully covered and the slit left exposed, the patient cannot read through the slit. On dilating the pupil to 5 mm. the slit becomes a round opening; at 7 mm. a floating piece of iris tissue becomes visible. Schoute believes that when the eye was struck, the aqueous humor from the posterior chamber forced the iris tissue before it into the corneal wound and then because of the vis-a-tergo ruptured the iris tissue which afterward retracted without forming either anterior or posterior adhesions.

**On the Relation of the Superior Tarsal Muscle to Congenital Ptosis.**

KOSTER (*Weekblad v. Geneesk.*, Aug. 26, 1899.), speaks of a case of bilateral congenital ptosis which came under his observation in which repeated instillation of a 5 per cent. cocain solution produced much more widening of one than the other palpebral fissure. The larger one was fully 6 mm. wider than before cocain was used, the upper lid margin being 4 mm. higher, and the lower lid margin 2 mm. lower than their usual parietic position. Koster says:

This striking improvement in this patient was clearly explainable by the action of the *tarsal* muscles; but, if the tarsal muscles can contract so strongly there must be a fixed point of origin, and we are, therefore, forced to conclude that the musc. palp. sup. was parietic and perhaps atrophied but at the same time did not fail entirely. From which it follows that the two tarsal muscles cannot be considered as voluntary muscles because they were passive and did not widen the interpalpebral fissure until cocain stimulation of the sympathetic nerve called them into action. Koster would make the following practical use of this lid reaction to cocain:

"If cocain irritation of the sympathetic nerve widens the "eye cleft" there is some hope of improving the position of the upper lid (in congenital ptosis) by shortening the tendon of the levator palpebrae superioris. If this upward widening of the "eye cleft" does not follow cocain stimulation of the sympathetic nerve, such operation would in all probability be useless."

# ABSTRACTS FROM RECENT AUSTRO-HUNGARIAN OPHTHALMIC LITERATURE.

BY

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NEW YORK. .

Quarter Ending September 30, 1899.

## I.

### **The Resection of the Cervical Sympathetic Nerve in the Treatment of Glaucoma.**

JONNESCO, PROF. DR. THOS., Bukarest. (*Wiener Klin. Wochenschrift*, May 4, 1899.) He resected the sup. ganglion nervi sympathetici in the case of glaucoma for the first time on the 13th of September, 1897, and reported the immediate results of the operation at a meeting of the Paris Academy of Medicine on October 10, 1897.

Since then he had occasion to perform this operation in eight other cases, and the majority of these are now old enough for us to draw some conclusions concerning this operation and its indications.

CASE 1. Glaucoma chron. irrit. absol. with attacks. Man, 50 years. Resection of the sup. gangl. cerv. of both sides on September 31, 1897. Strong contraction of pupil, diminishing of the ocular tone, even hypotonus, cessation of pains, marked improvement of vision. He sees fingers at a distance of 2 m. and moreover he walks alone and can avoid all obstacles. No recurrence of attacks.

CASE 2. Glaucoma chron. irrit. abs. with attacks. Woman, 44 years. Trouble began nine months ago. Perception of light, and vision was absent. Was operated October 3, 1897. Resection of the sup. cervic. gangl. on both sides. After the operation, slight contraction of pupil, slight diminishing of the ocular tension, vision slightly changed.

CASE 3. Glaucoma chron. irrit. absol. with attacks. Woman, 60 years. Disease began eight months ago.

Both vision and light perception were zero. Operated on October 15, 1897, and sup. cervical ganglion of left side was resected. After operation, there was little change in the pupil, slight lowering of ocular tension, perception of light and vision remained zero.

CASE 4. Glaucoma chron. irrit. Man, 49 years, from Hatzfeldt, Austria. Double iridectomy without improvement. Præorbital pain. He can read the 6 cm. large letters at a distance of barely 1 m. Operated November 7, 1897. Resection of sup. cervic. ganglion of both sides. After operation, contraction of pupil and of the coloboma iridis, decided lowering of ocular tone, cessation of pain. He is able to read ordinary print and also script. Improvement continues and becomes more marked, so that nine months after operation, there are neither pains nor recurrences of attacks, ocular tone is normal. Patient reads and writes with ease, and his general condition is excellent.

CASE 5. Basedow's disease since 6 years. Glaucoma chron. simpl. since 1 year. Man, 20 years, from Frieberg, Saxony. Double iridectomy without result. Struma tachycardia (Pulse 120-130) trembling, exophthalmos, sweating, hot flushes, etc., complete atrophy of the left papilla. On left side the acuity of vision is 0. On right side he barely perceives the fingers at a distance of 40 cm. Operated December 16, 1897. Total resection of cerv. sympath. of both sides, i. e., resection of the three ganglia and the middle piece. After operation, diminishing of ocular tension, disappearance of exophthalmos, and lessening of coloboma iridis. Pulse 90. Vision improved. He can see the fingers distinctly at 1 m. and can read the face of the watch at 20 cm. Improvement becomes more marked daily. On February 2, 1898, patient sees distinctly at 80 cm. the letters on an advertising board. Struma is diminished. Later on patient reads the 8 cm. letters at a distance of 1 m. 30 cm.

CASE 6. Glaucoma chron. simpl. absol. sin. Woman, 45 years old. Double iridectomy. Decided hypertony. Complete atrophy of the very excavated papilla of left eye which has no trace of perception of light. With the right eye she counts fingers at a distance of 15 cm. Was operated on January 25th, 1898, resection of the gangl.

cerv. supr. on the right side. Two weeks after the operation he demonstrated that the fingers could be counted at a distance of 1 m. 50 cm. After three weeks the vision is so much improved that the patient could count fingers at a distance of 2 m. 75 cm. The intra-ocular tension is diminished. The pulsation of the arteria retinæ is not visible any more. The improvement becomes continuously more distinct, so that the patient leaves the hospital on the 8th of April quite changed.

CASE 7. Glaucoma acutum (diagnosticated by Prof. Dr. Manolesco). Woman, 30 years of age. Decided hypertony. The turbidity of the humor aqueous makes the examination of the interior of the eye difficult. Pupil dilated. Preorbital pains and severe headache. Acuity of vision left zero, right changeable, fingers are at times distinguished at a distance of 1 m. 50 cm., at other times they are not seen at any distance. The excavation is more decided on the left papilla. Operated on the 4th of April, 1898. Resection of the gangl. cerv. supr. on both sides. After the operation, diminishing of the ocular tonus, incomplete contraction of the pupil, complete cessation of the pains, no change in the acuity of vision.

CASE 8. Glaucoma chron. simpl. Man, 45 years of age, from Hungary. The right eye was destroyed by a shot from a gun in his 16th year. Since 7 years the patient sees a rainbow around all objects. Iridectomy, in 1897, improved his vision for one month only. Coloboma sup. There is pigment on different parts of the ant. capsule, an excavation of the papilla is visible. Acuity of vision. No. 30 of Snellen's test card can be seen at 2 m. distance. After the operation, the eyeball becomes softer. Subjectively the patient declares that he does not see the rainbow around the light any more.

He therefore operated the following cases: 1 case of ac. glaucoma (7), 1 case of chron. irrit. glaucoma (4), 3 cases of chron. irrit. absol. glaucoma, and 3 cases of glaucoma chron. simpl. The results of these operations can be summarized as follows: a. immediate and permanent lowering of ocular tension in all cases especially in five (1, 4, 5, 6, 8); b. strong or at least distinct contraction of pupil, which remains permanent, even in iridectomized cases; c. disappearance of preorbital and other headaches, and

d. cessation of attacks of glaucoma irrit.; e. decided and lasting improvement of vision in all cases in which the perception of light and acuity of vision indicated that the papilla is not entirely atrophied. This improvement was remarkable on account of its rapidity and its increasing gradually, especially in the cases of glaucoma chron. simpl. (5 and 6) and in one case of glaucoma chron. irrit. (4). It failed in two cases of glaucoma chron. irrit. absol. (2 and 3), and in one case of glaucoma acut. (7).

He then tries to explain the manner in which these improvements are brought about by the resection of cervical sympathetic. He concludes that the removal of the ganglion destroys all the nerve filaments of the eye which act as vasoconstrictors, the bloodvessels therefore dilate, blood pressure decreases, extravasation diminishes. This resection destroys the excito-secretory nerve fibres, so that the aqueous secretion is lessened, it destroys the nerve fibres which dilate the iris, resulting in contraction of pupil, the angle of the iris and all the drainage canals become relieved, thus affording an easy outlet to the aqueous humor.

Finally this resection destroys the nerve fibres of the unstriped peribulbar muscles, thus allowing them to relax. The pressure in the emissary veins is lowered and circulation of the eye is restored.

As indications for this operation he considers especially these forms of glaucoma in which the nervous disturbances play a prominent part.

From the cases operated he concludes that the cases of glaucoma acut. glaucoma chron. irrit. with acute attacks, and glaucoma chronic irrit. which develop from a case of glaucoma prodromalis are less favorable for the operation, whereas the results are noteworthy in cases of glaucoma chron. irrit. without a prodromal period and especially in glaucoma chron. simpl.

It is his opinion that in the first cases there were, beside the nervous disturbances, also the inflammation, which cannot be influenced by resection of the sympathetic, whereas in the two latter forms of glaucoma the nervous disturbances predominate.

He further concludes that the resection of the ganglion sup. cervic. nervi. symp. was especially beneficial in cases

where iridectomy was performed without results. We are therefore justified in expecting a good result from this operation in cases of glaucoma chron. irrit. and simpl. We may really expect good results in all forms of glaucoma except in the hemorrhagic form, where the operation can only aggravate the symptoms and in the case of glaucoma absol. where vision is lost forever.

There can be no doubt as to which part of the sympathetic should be resected. All ocular fibres of this nerve pass through the sup. cerv. ganglion before they reach the eye; this ganglion must therefore be removed, so as to destroy entirely the sympathetic apparatus of the eye,—with the exception of the brain fibres which are lost in the trigeminus and together with this enter the eyeball.

There are two ways of reaching this ganglion, behind and in front of the sterno-cleido-mastoid muscle.

The premastoid method is really much more simple, causes less injury and is therefore to be preferred.

#### HIS FINAL CONCLUSIONS ARE:

1. These operations demonstrate the importance of the cervical sympath. in the development of glaucoma with the exception of the hemorrhagic form.

2. The sympathetic system of the eye is continually or intermittently irritated either by the centrum, or by the nucleus of the sympathetic eye nerve.

3. The removal of this cervical ganglion, through which all these nerves pass, paralyzes them, and removes all ocular disturbances, originating in them.

4. There may be some dispute as to the real mechanism of the post-operative hypotonus but the fact doubtless remains.

5. The best results are obtainable in those cases where the inflammation and irritation are absent or at least are not marked. As the operation is without much danger, it should be tried in all cases of glaucoma even in cases of absol. glaucoma attended by severe pain, because the pains tend to disappear after the operation.

6. Improvement of symptoms takes place directly after the operation, or even later. In all cases improvement is progressive.



7. This operation can be of use even in those cases where the disease progresses in spite of the previously performed iridectomy, i. e., in all cases where the usual operations are of no avail.

8. The complication of glaucoma by Basedow's disease as was seen in one case above, shows that the cause of glaucoma depends wholly or in part upon the continual irritation of the cerv. sympathetic. Resection of the cerv. sympath. cures the Basedow's disease, which is caused by continuous irritation of this nerve. Removal of this nerve effects the disappearance of all these troubles.

#### **Pemphigus Conjunctivae.**

SACHS, DR. M. (*Wiener Klin. Wochenschrift*. June 19, 1899,) demonstrates a case of Pemphigus Conjunctivae. The conjunctiva disappeared entirely, and in its place there appeared a superficial dry cutislike membrane which extends from the margin of the lids to the bulb of the eye. The eyelids are adherent to the bulb; they have lost almost completely their independent mobility and are pulled along by the motion of the eyeball. On the right eye which is the more affected, the eyelids are so much approximated on account of the cicatricial contraction of the conjunctiva, that we can hardly speak of a lid fissure. The picture is different in the left eye, which became involved later. Here the eyelids which are attached to the bulb can be separated from each other nearly 1 cm. The cornea does not lay bare in the lid fissure, as it is covered by the continuity of the membrane, which spreads from the margins of the lid to the eyeball. This membrane grows from all sides toward the cicatrized center of the cornea. The membrane which extends between the margins of the lids and which grows over the anterior part of the eye bulb is easily wrinkled; this is probably caused by the tension, which was produced by the effort of the patient in keeping the eye open. The patient who is 25 years old, suffers from pemphigus since 1894; he was for the first time in the spring of 1895 at the II eye clinic. At that time the appearance of vesicles on the conjunctiva and cornea on the left eye could often be observed. We are rarely in the position to see the vesicles in pem-



phigus conjunctiva, as they, on account of their very thin cover, easily rupture and change into shallow ulcers.

Besides the affection of the conjunctiva there was also an affection of the mucous membrane of the mouth and pharynx. He suffered the most from the trichiasis of the lower lids, which necessitated repeated operative interference. The patient in the following year called twice at the clinic. The contraction of the conjunctiva proceeded uninterruptedly. The local, as well as the general treatment, was without any results. The attempt to form a conjunctival sac, by the transplantation of a piece of the inner sheet of the præputium, failed. The patient left Vienna and presented himself only after three years' absence.

In the meantime the conjunctiva became totally contracted and thus the affection as far as the conjunctiva is concerned, is done away with.

With the right eye he is able to distinguish only between light and dark, with the left eye he is still able to count fingers at a short distance. The only way to improve the vision would be an operation, but the expectation of a good result would be very slight; because it would not be sufficient to merely make the cornea more transparent by a removal of the membrane, but we would also have to see to it that the cornea, which is thus laid bare should be covered by movable lids, which lids are covered by mucous membrane. As a material for transplantation, the conjunctiva of another person, or of a rabbit could be used. But such operations are extremely difficult, and are, even under better conditions than the present, rarely accompanied by a good result.

Finally, he says, that the patient still suffers from pemphigus of the mucous membrane of the mouth and pharynx. This contraction of the mucous membrane has already produced a considerable degree of lockjaw. The skin remained healthy in the beginning of the disease. Since three years, however, there appeared occasionally vesicles on the skin of the nose, which left slight cicatrices on the dorsum of the nose and on the alæ nasi.

#### **Keratitis Neuroparalytica.**

GROSZ, E. (*Ung. Med. Presse*, May 28, 1899.) The

writer dwells extensively upon the present stand of the question keratitis neuroparalytica, then describes the sickness itself and comes to the following conclusions:

1. That keratitis suppurativa, which is brought about in eyes of animals after dissection of the trigeminus, and in the human eye after injuries, pressure, after affections or resection of the trigeminus or in connection with paralysis of the facial nerve are results of an infection. The cause of this is an infection which is communicated by the way of the conjunctival sac, of the lachrymal sac, or by external continuity. This infection is favored by the anesthesia, which causes the dryness and the absence of protection against injuries.

2. The real cause of keratitis neuroparalytica in man and of keratomalacia and keratonecrosis, which is identical with the above affection is a degeneration of the cells of the ganglion ciliare caused by local hemorrhages or injuries.

**The Absorption of Light in Transparent Yellow Substances.**

SCHULCK, W. (*Ung. Med. Presse*, July 10, 1899.) The writer emphasizes that the lens of an adult is yellow and that recently yellow spectacles are recommended. It has as yet, however, not been established which light passes through yellow substances. He examined 16 varieties of yellow glasses and found that they shortened the spectrum; by the examination it was shown, that from the color of the medium we cannot draw a conclusion to its absorption. The yellow glasses disturb the original and with that the natural equilibrium of the single parts of the spectrum.

The author recommends the eye-glasses of chamber form. We can keep from the eye the ultra violet rays, without diminishing in the least the colored part of the spectrum, if we place in front of the eye a 2.5 mm. thick eye-glass of chamber form which is filled with trephynylanim mixed with xylol in proportion of 35:100.

**About the Permanent Results of an Operation for Myopia.**

GOLDZIEHER, W. (*Ung. Med. Presse*, July 10, 1899.) The writer treats extensively upon the recent procedure of removal of the lens in myopia, which operation shows such brilliant results, that there exists hardly an oculist

who would oppose it in theory. The vision of the operated myopic patient becomes, as most operators agree, better than it was before the operation, even with the best correction of concave lenses.

The author also speaks at length of the causes of the bad results and of the factors, which, when not observed, become the cause of these bad results. Goldzieher then speaks of Schnabel's assertion, who is of the opinion that "the myopic patient loses as much in his vision for near, as he wins in his vision for distance," and then cites the assertions from Haab, Hess, Hippel and Sattler, who consider the opinion of Schnabel incorrect. Goldzieher concludes, that the operation serves perfectly its purpose, the advantages of the operation completely overshadowing its dangers, and that the operation is worthy of being further cultivated and completed by the oculists.

**A Case of Myopia Where Operation Lessened the Vision for Near.**

VERMES, L. (*Ung. Medicin. Presse*, July 20, 1899.) The left eye of the patient was operated in Vienna one year ago on account of myopia. His vision for distance improved and satisfied him very much. Convex 3.0 D. V. = 6/30!! He came to us with the complaint that he lost the ability of sewing, reading, etc., whereas previously he could even thread a needle. The author thinks the theory that the patient acquires the vision for near in course of time is not valid, as the patient did not acquire the same even after a year. Vermes recommends great caution in this operation and thinks that this operation is not to be recommended very much.

**Blindness as a Result of Tabes Dorsalis.**

SCHULCK, PROF. W. (*Ung. Med. Presse*, July 20, 1899.), read the paper of Doctor Grosz. Grosz examined the eyes of 101 cases of tabes and examined histologically the optic nerve in 12 cases. The first stage with good central vision can remain for a long time, in the second stage however the vision decreases rapidly. The affection is of a progressive nature and leads always to blindness. The peripheric limitation of the field vision, and the difference existing between both eyes indicate that the main seat of the affection is to be found in the part of the optic nerve which lies in front of the decussation. In

view of this fact the atrophy (histologically) decreases as we go upward from the eye and he succeeded in demonstrating that the marginal nerve fibres showed the highest degree of atrophy. According to Grosz the origin of the affection of the optic nerve is to be found in the ganglionic layer and the atrophy of the optic nerve is a symptom co-ordinate with the change in the spinal cord; the same poison which causes the degeneration of the central nervous system, causes also the degeneration of the optic nerve. The poison is transmitted by the blood vessels, and all the symptoms indicate that syphilis plays, directly or indirectly, the main part in the causation.

## OPHTHALMIC NEWS ITEMS AND ANNOUNCEMENTS.

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(Under this heading the ANNALS will publish items of interest to its readers. Please address Dr. B. E. Fryer, 520 East Ninth Street, Kansas City, Mo.)

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Dr. Filippo Nattini has been appointed privat-docent of ophthalmology at Genoa.

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Dr. Joseph Rohmer has been made professor of clinical ophthalmology at Nancy.

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The Royal London Ophthalmic Hospital, formerly at Moorfields, has been moved to a beautiful new building in the City Road. It has 50 beds.

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Professor von Michel, professor of ophthalmology in the University of Würzburg has been elected rector of the University.

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A statue of Helmholtz, in front of the building of the University of Berlin, was unveiled on June 6th, in the presence of the Empress Augusta Victoria and the Crown Prince.

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A new eye-clinic has been opened in the University of Breslau. It is due to Professor Foerster's efforts that it was built. His successor, Professor Uhthoff, is the director. It has 48 beds.

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Dr. William R. Murray, who has been associated with Dr. H. V. Würdemann, in Milwaukee, for the past two years, will practice ophthalmology and otology in Minneapolis, Minn., after October 15, 1899.

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Dr. Geza Michalvots, one of the foremost anatomists of Budapest, died very recently. He was born in 1844. A complete biography of this distinguished anatomist is given in the Ungarische Medicin: Presse No. 23-24.

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Professor Herman Knapp delivered a most scientific and interesting address on "The Landmarks in the history of ophthalmology in the nineteenth century," April 25, at the centennial meeting of the Medical and Chirurgical Faculty of Maryland.

P. Blakiston's Son & Co., of Philadelphia, announce the issue of the first volume of Deane's Surgical Anatomy, a book that has been long expected as decided contribution from America to scientific literature. As it contains many sections of great value to the ophthalmologist, it will be reviewed in detail in the next issue of the ANNALS.

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An International Pharmacopeia.—Dr. Rommelaere has submitted to the Belgian Academy of Medicine a proposal that it should take steps to promote the adoption of an International Pharmacopeia. He suggests that the Academy should ask the Belgian Government to invite the coöperation of other governments in the furtherance of the scheme.

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The Queen's Eyesight.—According to the London Truth, which does not always live up to its name, Queen Victoria, who was suffering with cataract, underwent a ten-week's course of treatment for her eyes prescribed by Dr. Hermann Pagenstecher, a German oculist. The treatment is alleged to have been most successful, and to have obviated the necessity for an operation.—(*N. Y. Med. Record*, Aug. 5, 1899.)

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In a series of 100 cases Engelmann used a 20 per cent. solution of protargol, which proved to be less irritating and to be a better bactericide than argentic nitrate. According to Cramer, in his series of 100 cases treated with argentic nitrate, 96 showed more or less secretion, sometimes even to the fifth day. In Engelmann's series, 80 per cent. showed none or very little irritation, which lasted at the most 1½ days. There was no secondary catarrh.

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Dr. Nelson M. Black, who has been with the 8th Army Corps as Captain and Assistant Surgeon in the Phillipines, returned with his regiment, 1st North Dakota Volunteers, August 1st. He participated in over 30 battles and skirmishes beginning with the fighting around Manila and the battle of Caloocan. Before entering into active service in the field he did much of the ophthalmic and aural practice of the American Army, being delegated for this work.

After October 1st, he will again be associated with Dr. H. V. Würdemann, in Milwaukee, with whom he practiced before entering the Army.

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Growth of the Boston Eye and Ear Infirmary.—In 30 years the number of new patients treated in the Boston Eye and Ear Infirmary has increased nearly fivefold, and the number of operations over thirteen fold. The record stands: Whole number of patients in 1868, 4,448; in 1878, 9,465; in 1888, 13,140; in 1898, 20,929. Number of operations: In 1868, 283; in 1878, 379; in 1888, 3,140; in 1898,

3,718. The operations for cataract in 1868 were 68; in 1878, 76; in 1888, 129; in 1898, 140. Even the out-patient department draws almost as many patients from Massachusetts outside of Boston as from that city. Last year Boston furnished 10,709, and the other towns in the State 9,933. The ophthalmic department is much larger than the aural. In the eye wards there were 1,096 patients, and out-patients numbered 15,486. In the ear wards the number stood at 324, and out-patients were 5,443. During the year 1898, 17 donations and bequests were received, aggregating the handsome fund of \$110,000.

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Dr. Casey Wood, in charge of the department of Italian ophthalmic literature in these ANNALS, has arranged with Professor Guaita and Dr. Bardelli, of the *Annali di Ottalmologia* for the simultaneous publication of such articles as may be agreed upon in both these journals. The modern school of Ophthalmology in Italy is a very active and influential one and we are sure that the readers of the ANNALS will greatly benefit by this arrangement. We draw attention to the first of these articles in the present number entitled "The Use of Cocain in Measuring the Amount of Heterophoria."

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Blake discusses the elimination of the pecuniarily unfit from the hospital dispensary. At the Massachusetts Charitable Eye and Ear Infirmary, all suspicious cases are referred by the physician to the executive office, and it has been proposed to have a special clerk in the dispensary for the purpose of questioning those who seem able to pay. All suspected patients are required to sign a paper in which they state that they require charity. Blake calls attention to the fact that so many different methods are employed that there is no uniformity or regularity in hospital procedure, and, therefore, suggests that a bureau or clearing house be established in each large city by all the hospitals acting together, where suspected cases could be thoroughly investigated. [J. S.]—*Phila. Med. Journal*, Sept. 2, 1899.

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Mr. Simeon Snell's address, as President of the Ophthalmic Section of the British Medical Association, was on the Prevention of Eye Accidents Occuring in trades.

At a meeting of the section, Aug. 2, Mr. F. Richardson Cross opened a discussion on Sympathetic Irritation. He took a broad view of the term, and urged that it is impossible to distinguish in the early stages between simple irritation and more formidable aspects of sympathetic diseases. Mr. Cross is inclined to believe that the cause and route of the pathologic change remained in doubt. Landolt, of Paris, took part in the discussion, as did also Mr. McHardy, of London, Deputy Surgeon General Cayley, Mr. Devereux Marshall, Dr. John Hern, Dr. Reeve of Toronto, Dr. de Schweinitz of Philadelphia, the latter stating that modern observa-

tions evidently failing to confirm Deutschman's theory, though did not exclude possible microbic influence.

Euphthalmin, the new mydriatic, was the subject of a paper by Dr. Hinshelwood, of Glasgow.

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Les Verres Isométriques. Par le Dr. de Bourgon. Paris: A Maloine. 1899.—This monograph is a treatise on the physical and optical properties of spectacle lenses made of a new glass, of secret composition, devised and patented by Mantois, who for some reason unexplained, has named it isometric. A year ago these lenses were put on the market by la Maison Fischer, Paris, and they have been favorably reported on by several oculists and exploited in the lay press. The advantages of the new glass over the crown glass commonly used in spectacle lenses are, first, that it is more homogeneous, limpid, and transparent; and, second, that it is harder and of higher refractive index, so that for a lens of given focus the curvature is less and there is consequently less spherical aberration. On the other hand, the disadvantages of the new glass are its great dispersion and its excessive chromatic aberration, which render strong lenses of this composition useless. Pebble lenses, while hard and beautifully transparent, must be cut in a certain relation to the axis of the crystal in order to be satisfactory. The most singular property of the new glass is its impenetrability to the Roentgen rays, and while lenses of pebble or of crown glass, even though tinted, come out pale in a skiagraph, the isometric lens comes out quite black. By thus cutting off the Roentgen and ultra-violet rays, the author states that the wearing of plane isometric glasses alone has sufficed to relieve retinal asthenopia in several patients.

The treatise is very complete, and the author seems to have considered every aspect of his subject.—(*N. Y. Med. Record*, July 22, 1899.)

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The Optical Science of a President of an Optical College.—To Dr. David W. Stevenson, of Richmond, Ind., the profession is greatly indebted for a discovery of no inconsiderable value. He has discovered a rare book, entitled "Optical Truths," by Chas. McCormick, M. D., President of McCormick Optical College, 84 Adams Street, Chicago. This book, Dr. Stevenson says, was reviewed favorably by an "optical" journal, and was recommended to him by wholesale opticians "as the coming book on optics." From the selections given by Dr. Stevenson in his article ("Sample Misstatements in a Book of Opticians," *American Journal of Ophthalmology*, May, 1899) we have a valuable addition to the growing list of additions of contributions to science as she is taught by ignoramuses. When spurred by avarice, the impertinence of ignorance becomes unconsciously humorous, and our professional life is so serious that we must be highly grateful for anything contributing to the gaiety of nations, especially if it illustrates the truth that the quack opticians who wish to supplant medical men in the field of



ophthalmology should not begin by an ignorance of optics and physiology so great as to advertise their incapacity to boobies and first-form schoolboys. We hope the first edition of "Doctor" McCormick's unique book may not be exhausted before we secure a copy.—*Phila. Med. Journal*, July 25, 1899.

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The Study of Diseases of the Eye in Antiquity.—It is stated in the *British Medical Journal* that the second edition of Graefe-Saemisch's treatise on ophthalmology contains a very interesting essay on the study of eye-diseases in antiquity by Professor Hirschberg. The oldest document bearing on the subject is a papyrus discovered at Thebes in 1872 by Ebers, who assigned it to a date about 1500 B.C., 1000 years before Hippocrates. From it we learn that there were at that time three kinds of medical practitioners in Egypt—namely, physicians, surgeons, and "thaumaturgists," whose memory we shall probably not culminate by regarding them as the prototypes of our own faith-healers and miscellaneous quacks. The papyrus describes the three most important symptoms of eye-diseases as excessive secretion, redness, and swelling. Among the remedies advised are myrrh, frankincense, acetate of lead, onion, verdigris, the dung of crocodiles and gazelles, brain of tortoise mixed with honey, woman's milk, but especially antimony. All Egyptians, as is shown by the boxes found with mummies, used ointments to blacken their eyebrows and eyelashes. Virchow, who analyzed the contents of one of these boxes, found that the collyrium consisted not of antimony, but of sulfate of lead. This circumstance appears to show either that the relatives of the deceased thought a cheap article good enough for the "corpse," that the undertaker swindled them, or that some one else got a secret commission on the little job.—*Phila. Med. Journal*, August 12, 1899.

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AMERICAN OPHTHALMOLOGICAL SOCIETY, July 19, 1899.—A Description of the Reflecting Phorometer and a Discussion of the Possibilities of Torsion in the Eyes.—Dr. F. H. Verhoeff, of Baltimore, Md., present by the invitation of the Society, said that the instrument differs from other phorometers in that mirrors are used in place of prisms, thus permitting of the greatest simplicity in construction, together with the most advantageous movements in the apparent images. There are four mirrors, two for each eye. By turning a milled screw, the lower mirror may be made to rotate toward or away from each other so as to produce lateral separation of the images. It is to be noted that this arrangement produces equal though opposite movements in the two images. Vertical separation of the images is produced by rotation of one of the upper mirrors. The parallax test of Duane has been adapted to this instrument, and a very important feature of this phorometer is a shutter which slides back and forth between the eyes so that when in use, the patient can see with but one eye at a time. The shutter is moved back and forth very quickly, a pause being made, however, before each eye so that time is given for the after image to

disappear, and the patient is asked to state whether the object moves or not. If he sees the object apparently moving obliquely, the upper mirror is adjusted until the movement is horizontal and then the lower mirrors are adjusted until practically all movement is overcome. Both the amount of hyperphoria and also the esophoria or exophoria, if present, will be indicated upon the scales. It is thus possible by means of the reflecting phorometer to determine the amount of heterophoria either by the diplopia test or by the shutter test, and, in addition, the amount of abduction, adduction, and right or left sursumduction may be readily obtained. By means of a special chart consisting of two rotary discs placed one above the other the instrument may be used to determine and measure any possible torsional deviations in the eyes. It was shown that by means of the instrument an artificial torsion could be produced in the retinal image of any object regarded. In this way it was determined that the eyes can bear, without discomfort, a tilting of the retinal images in the two eyes equivalent to a torsion of  $8^{\circ}$ . Four experiments were described to prove that torsional combining power or an ability to so rotate as to overcome artificially produced declinations and cyclophoria, do not exist. Since the fusion of lines situated upon non-corresponding points of the retinae is not due to torsion of the eyes it was spoken of as being due to psychical compensation. Dr. Verhoeff believes that the existence of a torsional combining power has been assumed by Stevens without sufficient evidence and that Savage has fallen into error in assuming the existence of cyclophoria.—(*Phila. Med. Journal.*)

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**Opticians Protest.**—The Optical Society of the State of New York met in executive session on Tuesday, June 27, at the Fifth Avenue Hotel. The principal object of the meeting was to perfect the affiliation of the various local societies throughout the State into a general State body, the principal affiliating societies being those of New York City, Syracuse, Rochester, and Buffalo. At the same time there was a warm discussion of the recent action of the American Medical Association at the Columbus meeting (published in the Journal) and of the American Institute of Homeopathy at Atlanta City. The Columbus resolution was introduced by Dr. J. L. Lautenbach, of Philadelphia, and is to the following effect:

“*Resolved*, That it is the opinion of the American Medical Association that opticians are not qualified by their training nor are they legally qualified to perform the work of the oculist, and they should not be the consultants of regular physicians. Further, it is resolved that all physicians are requested to call their brother physicians in consultation, thus discountenancing the growing pretences or assurances of the optician and his brother, the graduate optician, or, as he is now beginning to call himself, the ‘ophthalmotrician.’ ”

The resolution of the optical society reads that “The society views with regret the unprofessional and unscientific attitude of

those medical societies in adjacent States who are led by designing eye-specialists to adopt resolutions tending toward the estrangement of opticians and physicians. This society believes that the honorable occupation of an optician entitles him to the same courteous consideration at the hands of medical men as that now accorded to those following dentistry and other mechanico-scientific callings." While the Optical Society took this action in relation to the limitation of their trade at the upper end, no consideration was given to the encroachments at the lower limit, where the greater amount of harm accrues to the users of aids to vision. Of 8 department stores in New York chosen at random in the busiest retail shopping-district, 6 conduct an optical department, 3 of which advertise the services of graduate opticians. At any of the 6 establishments spectacles may be bought over the counter at the choice of the customer, one number after another being tried until a fit is found. Practically the only difference between the stores which have opticians and those which have not is to be found in the presence on the counter of more or less imposing mechanical test appliances which are seldom used. The glasses most commonly sold are those for simple myopia or simple presbyopia. Cases of astigmatism by itself or complicated with lens-deformity are met with the statement that the stock of that kind of glass has just been sold out and a cautious recommendation to some eye-clinic. On the day that the Optical Society was protesting against the action of the medical societies an actual count along four blocks of Fulton Street and the two adjacent blocks on Broadway, showed 9 venders of glasses whose stock was carried in barrows or boxes slung by a strap around the neck. These venders carried only a single line of glasses, those for "old sight." A tenth vender was omitted from the count because he dealt only in smoked and tinted glasses without refracting qualities.—(*Phila. Med. Journal*, July 8, 1899.)

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#### INTERNATIONAL OPHTHALMOLOGICAL CONGRESS.

Ninth annual meeting, held at Utrecht, August 14 to 18, 1899.

The time fixed for the Congress was from August 14 to 18, inclusive, but the first day, Monday, was taken up with registration, securing tickets for the various excursions and in sight-seeing. The last included, of course, a visit to the new Ophthalmic Hospital, one of the finest in the world. At the opening exercises in the grand hall of the university, on Tuesday, Prof. Argyll Robertson, President of the Eighth Congress, spoke of the appropriateness of meeting in Utrecht, the seat of an ancient and famous university whose school of ophthalmology, through the works of Donders, and later of Snellen, is so favorably known, and which occupies a foremost place among the schools of the world. He referred feelingly to the death of our master, Donders, and voiced the regret of all present that he could not have lived to attend this meeting in the city which his own labors had done so much to render famous.

Prof. Snellen was then elected President by acclamation and read

his opening address in French. He paid a glowing tribute to Holland from an artistic point of view and then proceeded to discuss two prominent Dutch characters, Boorhaave and Donders. Both were early destined for theology, but following the inevitable trend of mind both devoted their lives to scientific studies with results known to all the world.

A general session for scientific business followed, in which the paper of the day was read by Priestly Smith of Birmingham, on convergent strabismus. He follows the teaching of Javal, and favors early treatment. This he divides into three classes.

1. By diminishing accommodative power and increasing vision by glasses, or fully restraining accommodation by continuous use of atropia.

2. By exercise of the squinting eye by means of a shade or pad over the good eye.

3. Operation.

Then followed statistics of 576 cases, showing that of the onset age, 60 per cent. were under 4 years and 40 per cent. over. In a large percentage of cases treated, he used glasses; the youngest patient for whom they were prescribed being only 14 months old. In many the pad and bandages were used in connection with the glasses. If these measures fail, after a reasonable time, the author favors early operation, as opposed to those who wait till 5, 6, or more years of age.

The committee of arrangements had provided that one hour each day, from 9 to 10 a. m., should be devoted to a general session, and the remaining time to meetings in subscriptions, in order that the work of the congress might be divided and the largest possible number of papers be read. Thus, *Section A*, Anatomy and demonstrations; *B*, Biology; *C*, Therapeutics. A large number of papers was thus brought before the congress. The address in the general section on Wednesday was by Dr. Th. Leber, of Heidelberg; on Thursday by Dr. Panas, of Paris; while on Friday two papers were read in general section, one by Dr. C. Reymond, of Turin, and one by Dr. H. Knapp, of New York, the latter being on the Symmetry of the Eye and a Proper Basis for Noting Meridian and Field of Vision.

All of the sections were well attended and it appeared that the majority of the members had come for the purpose of attending to the scientific work of the congress and not for mere sightseeing and amusement. There were 98 papers upon the program, and by division of the work in sections, an opportunity was given for the disposal of nearly all of them, a few not appearing though announced. Representation from America, on the program, was scanty, though many oculists were in attendance. Papers were read by Dr. R. Sattler, of Cincinnati, on The Ocular Manifestations of Hyperostosis Cranii; Dr. J. M. Ball, of St. Louis, on Removal of the Superior Cervical Ganglion for Glaucoma, with the report of two cases; Dr. H. Knapp, of New York, on Some Rare Tumors of the Orbit; Dr. E. Boeckman, of St. Paul, on Pannus Trachoma-

tosus and Its Treatment by Periectomia Corneae; and by Dr. Chas. H. May, of New York, on A Standard for Measuring the Field of Vision. Dr. G. J. Bull, who, though now a resident of Paris, formerly lived in Massachusetts, read a very interesting paper on Fatigue from the Effort to Maintain Binocular Single Vision. Many prominent foreigners took part in the work of the congress, and it was a pleasure to see and hear so many who were so well known to ophthalmology on our side of the Atlantic.

The social features of the week were by no means neglected. On Tuesday evening a grand dinner was given at Tivoli's restaurant, followed by an open-air concert and most beautiful fireworks. Wednesday afternoon and evening were devoted to an excursion to Amsterdam. On arrival about 3 p. m., the museum and picture gallery were visited, then carriages were in waiting and members of the Congress and friends were driven through the chief parts of the city, ending at the Aquarium and Zoological Gardens. Then followed dinner, and concert and returned to Utrecht about 11. On Thursday afternoon, starting at 4, an excursion was made to Baarn, and after a walk through the Royal Park, a visit to the summer palace of the Queen of Holland, at Soest dijk. In the grounds at the rear of the palace tables were spread in waiting and light refreshments, consisting of cake, champagne, and tea, were served as the Queen's tribute to the Congress. Upon returning through the palace each lady of the party received a bouquet from the Queen's garden. Then dinner at Baarn and return by train to Utrecht. On Friday afternoon the final excursion was made to The Hague and Scheveningen, the famous watering-place of Holland. Here dinner again and return to Utrecht about midnight. The dinner each evening was an elaborate banquet, at which over 300 people were seated. Speeches were made, songs were sung, and all present were prepared to vote each banquet a success, and each, if possible, an improvement upon its predecessor. At the last, held at Scheveningen, Dr. Risley, of Philadelphia, responded for the United States in a most appropriate and eloquent speech.

Dr. Snellen, as President of the Congress, won golden opinions from all. The railroads put their best trains at the disposal of the Congress free of expense. The people of Utrecht seemed to feel that an honor had been paid them by holding the meeting of the Congress in their city, while each guest who partook of their unbounded hospitality will depart feeling that ophthalmology has been honored by the physicians and citizens of Utrecht, by the people of Holland, and by Her Gracious Majesty Queen Wilhelmina. —*Phila. Med. Journal*, Sept. 9, 1899.

The following papers were read at the 9th International Congress of Ophthalmology, August 14-19, 1899.

#### SECTION A.

H. Einthoven—Geometric Optical Illusions.

J. P. Nuel—The Channels in the Anterior Chamber for Eliminat-

ing the Aqueous Humor.

F. Benoit—Eliminating Channels at the Posterior Pole.

F. Landolt—A New Stereoscope.

E. Treacher Collins—Anatomical and Congenital Defects of the Ligamentum Pectinatum.

M. E. Mulder—Pathologic Anatomical Demonstrations.

Ole Bull—(1) Drawings and Chromatic Tables. (2) Changes in the Retinal Blood-vessels.

F. Dimmer—Photographing the Fundus.

L. Dor—Projection of Photographs from Nature in Colors.

Th. Axenfeld—Pathologic Anatomical Demonstration.

J. Mackenzie Davidson—Localizing Foreign Bodies in the Eye by X-Rays.

K. Grossmann—Localization of Foreign Bodies in the Eye by X-Rays.

J. von Michel—Pathological Changes in the Ocular Blood-vessels.

A. Siegrist—Arterio-Sclerosis of the Ocular Blood-vessels.

S. Theobald—A Case of Detachment of the Retina, with Complete Re-attachment and Restoration of Vision.

D. Goldzieher—Iritis Glaucomatosa.

C. Nicolai—The Tension of the Tissues of the Eye.

W. Schoen—The Three Essential Anatomical Changes of the Glaucoma Process.

Bietti and Axenfeld—Nerve Degeneration After Neurectomia Optico-Ciliaris and Anterior Ciliary Nerves.

E. de Gross—Keratitis Neuroparalytica.

E. Kruckmann—Does a Primary Cancer Occur in the Eye?

E. Frank—Pathological Anatomy of Ocular Leprosy.

C. Addario—Anatomical and Bacteriological Researches Concerning Conjunctivitis Trachomatosa.

R. Hitschmann—The Pathogenesis of Corneal Dermoids, Subconjunctival Lipomata and Congenital Coloboma of the Lids.

F. D. A. C. von Moll—Metastatic Conjunctivitis.

A. Druault—The Colored Rings Seen Around a Flame in the Normal and Pathologically.

E. von Gross—Tabetic Optic Nerve Atrophy.

F. Heine—(1) Anatomy of the Myopic Cone (Communication from Prof. Hess). (2) Contracted and Relaxed Ciliary Muscle (Communication from Prof. Hess).

W. B. Jessop—Glioma Retinæ.

A. Neuschueler—The Fibers of the Optic Nerve.

L. Dor—The Nervi Nervorum of the Chiasma.

E. Pergens—The Retina of *Leuciscus Rutilus* L.

K. Grossmann—Listing's Law and Palsy of the Muscles of the Eye.

E. Pflueger—(1) New Chart for the Detection of Color-Blindness. (2) Proximate Visual Acuity in Myopia of High Degree.

Greef—The Nature of the So-Called Fuchs' Atrophy of the Optic Nerve.



## SECTION B.

- M. Tscherning—The Accommodative Changes in the Eye.  
Rogman—The Pseudo-accommodation in the Aphakic Eye.  
Pfalz—Perverse Astigmatism.  
S. Holth—(1) Ophthalmometric Studies. (2) Ophthalmometric Studies on the Eye after Death.  
L. Howe—The Desirability of Greater Exactness in Expressing Pupillary Reaction.  
Kempner—New Instrument for Studying Hemianopic Pupillary Reaction.  
L. J. Lans—Pupil Width.  
C. Hess—Accommodation and Convergence.  
G. T. Stevens—The Declination of the Vertical Meridians of the Retina.  
G. J. Bull—Fatigue from Trying to Maintain Binocular Single Vision.  
A. Bielschowsky—Vision of Strabotics.  
Pfalz—Influence of Exact Correction in Youth on the Development of Myopia.  
W. Koster—The Elasticity of the Sclerotic and Its Relation to the Development of Glaucoma.  
Uhthoff—Injury to the Eye by Insolation.  
H. Zwaardemaker and L. J. Lans—Refractory Aspects of Eye Reflexes.  
Silex—Pseudomonochromasia.  
E. Sulzer—Color-Perimetry.  
F. Ostwalt—Experimental Studies with Periscopic Glasses.  
P. de Obarrio—The Best Visual Acuity.  
H. Coppez—Action of Certain Toxins on the Cornea.  
O. Neustätter—(1) The Shadows in Skiascopy. (2) Phantom for Skiascopy.  
E. Landoldt—Reform in Numbering Prisms.  
Ch. H. May—Standard for Measuring the Field of Vision.  
F. Schieck—The Primary Changes in Ribbon-Keratitis.  
W. Thorner—A New Ophthalmoscope Giving an Image Without Reflexes.

## SECTION C.

- O. Schirmer—Benign Post-Operative Cyclitis.  
M. Straub—Hyalitis.  
W. Schoen—Scleritis and Its Connection with Myopia.  
O. Haab—Intraocular Disinfection.  
H. Dor—Treatment of Retinal Detachment.  
E. Motais—New Operation for Ptosis.  
H. Sattler—Iron-Cataract.  
A. von Hippel—The Lasting Effects of Myopia Operation.  
A. Critchett—Operative Treatment of Conical Cornea.  
G. A. Berry—Operations for Conical Cornea.  
E. Clark—Union of Corneal Wounds.

R. Sattler—(1) Ocular Manifestations of Hyperostosis Cranii. (2) Uncommon Orbital and Ocular Expressions of Maxillary Sinus Disease.

V. Morax—Toxins Producing Conjunctival Inflammation.

Jocqs—Methods to Render the Lens Quickly and Completely Dim Without Tearing the Capsule.

J. Hern—Operative Treatment of Glaucoma.

Valude—Bactericidal Action of the Tears. Prophylaxis and Treatment of Operative Infection.

Rohmer—Post-Operative Treatment of Cataract.

T. Dianoux—Treatment of Corneal Infiltration by Injections of Ocean Salt-Water.

Darier—Ocular Massage, Corneal Massage, Vibratory Massage, Massage Pressure, and Its Action on the Accommodation and Refraction.

Lapersonne—Optic Neuritis Dependent on Sinusitis and Diseases of the Posterior Part of the Nasal Fossæ.

H. Coppez—Treatment of Granulations by Electrolysis.

J. M. Ball—Removal of Cervical Ganglion for Glaucoma.

A. Emrys Jones—The Treatment of Some Complicated Cases of Closed Pupil.

G. Guttman—Treatment of Complicated Cataract.

H. Knapp—Some Rare Tumors of the Orbit.

B. Wickerkiewicz—New Operation for Epicanthus.

E. Böckmann—Pannus Trachomatosis and Its Treatment by Periectomy.

A. Bronner—Sixty Cases of Extraction of Senile Cataract Without Iridectomy.

Darier—Treatment of Conjunctivitis with the Different Silver-Salts.

O. Neustaetter—Washing the Nasal Duct from the Puncta Without Cutting or Stretching.

W. Schoen—Changes Caused in the Infantile Eye by Spasms.

J. Lavage—Treatment of Congenital Nystagmus.—(C. Barck, *Am. Journal of Ophthalmology*, October, 1899.)



## BOOK NOTICES.

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### ATLAS OF EXTERNAL DISEASES OF THE EYE.

**RAMSAY, A. MAITLAND**, Glasgow. (Fellow of Faculty of Physicians and Surgeons, Glasgow; Ophthalmic Surgeon, Glasgow Royal Infirmary; Professor of Ophthalmology, St. Mungo's College, Glasgow; and Lecturer on Eye Diseases, Queen Margaret College, University of Glasgow. With 30 full-page colored Plates and 18 full-page Photogravures, James MacLehose and Sons, Glasgow; The Macmillan Co., New York. Price, \$20.00.)

The bookmaker has almost arrived at perfection as regards typography and illustration. Medicine calls to its aid all of the arts and sciences, among them the pictorial art which aids so greatly to the enlightenment of our modern text-books. One of the finest is Ramsey's Atlas of External Diseases of the Eye. It is a work of art, *par excellence*. The 30 full page colored plates have been reproduced in the most exquisite manner and natural style from colored drawings by Dr. Ramsay. The 18 full page photogravures are reproduced from photographs and are very satisfactory. The plates in this atlas are mostly executed from photographs of actual cases occurring in connection with the author's work at the Glasgow Eye Infirmary and were originally prepared to illustrate his lectures on eye diseases at Queen Margaret College.

The literature is not only descriptive of, but complimentary to the plates, filling out the clinical pictures of the preceding and subsequent stages of the diseases represented as well as accurately describing the stage in which they are pictured. Many of the plates contain four to six figures. These are mostly life size. The photogravures of faces are large and excellently depict the relation of the diseased ocular structures to the rest of the head. The coloring, drawing and reproduction of the plates are so well done and true to nature that, if ever another atlas of a similar character be brought out, it will be almost impossible to equal, not to say surpass, this beautiful book. Evidently no pains or expense have been spared and despite its expense, it is heartily recommended to oculists as well as medical men in general practice.

H. V. W.

### THE OPTICIAN'S MANUAL. A TREATISE ON THE SCIENCE AND PRACTICE OF OPTICS.

**BROWN, C. H.**, Philadelphia (Graduate University of Pennsylvania; Professor of Optics and Refraction; Formerly Physician of the Philadelphia Hospital; Member Philadelphia County, Pennsylvania State and American Medical Societies. Published Exclusively in The Keystone, the Organ of the Jewelry and Optical Trades, Philadelphia. With Illustrations. Third Edition.)

This volume is intended as a text-book or reference manual for the use of opticians, it being a reprint of an essay which was pub-

lished in sections in the Keystone, beginning May, 1890, an installment of which has appeared in every issue up to date. It is fairly simple in style and relatively free from technical terms so that an educated tradesman may understand most of its contents, even though through want of a professional knowledge of diseases of the eye or proper preliminary training he would be unable to put many of the author's propositions to practice.

To the physician this work of practical importance as it contains material as to decentering, measuring and testing of lenses, the mounting and fitting of spectacle frames and eye glasses, which are not sufficiently described in our text-books and with which we should be, at least theoretically, familiar. The author lays great stress upon the necessary "optical education" for the jeweler and optician. Under Chapter VIII, relating to the "Outfit Required," he gives the following:

"1. Optical education. 2. Books of reference. 3. Case of test-lenses. 4. Complete set of test-types. 5. Measuring-stick or metric-rule. 6. Record-book or case book. 7. Ophthalmoscope. 8. Retinoscope. 9. Prismometer. 10. Ophthalmometer. 11. Keratometer. 12. Phorometer. 13. Optical bracket. 14. Perimeter."

"The optician of to-day is in the bloom of a business that is growing without limit, but only the educated opticians will be in a position to pluck its choicest fruits; and hence there is no hesitation (and probably no one will dispute this assertion) in placing an optical education as the first requisite in the outfit required by the practical optician."

A few practical suggestions are given regarding the symptoms of glaucoma, but these of themselves are not sufficient for diagnosis. This disease is the *bête noir* of the experienced ophthalmic surgeon and for its diagnosis a large amount of learning as well as practical experience is necessary. The optician is warned against the use of atropin and mydriatics in glaucoma.

"It is a well established fact, and one that is more or less familiar to all opticians, that the use of mydriatics should be religiously shunned in an eye with a tendency toward glaucoma, as the instillation of a single drop of an atropin solution has been known to develop an attack of this dreadful affliction in a person who has a predisposition to the disease.

"An eye with a tendency toward glaucoma has its greatest enemy in a mydriatic, it acting on the eye as a most virulent poison does on the body, and, in fact, no more injury could be inflicted on the eye by stabbing it with a sharp knife than is produced by an acute attack of glaucoma superinduced by the use of a solution of atropin

"For these reasons the optician should be extremely careful in ordering atropin to be dropped into an eye for the purpose of examining the condition of its refraction, especially in those persons who have reached or passed the age of forty years. The well informed optician is constantly on his guard not to fall into such an error."

Going through the book the ophthalmologist will be struck with the manifest desire of the grinder of lenses and seller of spectacles to encroach upon the functions of the physician:

"Physicians and oculists are annoyed and alarmed, more than they will admit at the encroachments made upon what they consider their territory by the educated and graduate opticians of to-day. There is a large and ever-increasing number of persons

who have their eyes examined and glasses adjusted by opticians, and without the advice of a physician. Middle-aged persons who needed glasses only for the correction of presbyopia, always purchased them of opticians or jewelers, and formerly the trade of the optician was confined to this class of cases.

"But in recent years the optician has developed beyond a mere seller of spectacles; he has shown a laudable desire to educate himself and to adjust spectacles from a scientific standpoint. Not only this, but he has familiarized himself with the methods and instruments necessary for a thorough examination of the physical, as well as the refractive, condition of the eye. As a consequence of this more complete preparation of this work, the field of the optician has enlarged considerably, and his practice is no longer limited to the sale of spectacles for the relief of aged sight, but extends to the successful correction of all the optical defects to which the eye is subject, and even to the relief of complicated muscular anomalies.

"This, naturally, has aroused the antagonism of the medical profession, inasmuch as it has diverted a large stream of profitable trade from the office of the oculist into the parlor of the optician. There is an old saying that a man can be touched or influenced through his pocket-book more quickly and potentially than by any other means, the truth of which remark is very aptly exemplified in the attitude assumed, and enmity shown, by the medical fraternity toward the optical profession. This is exhibited, not only by the physician in his daily walk and talk, but is reflected on the pages of the various medical journals.

"The position physicians assume is that no one but a medical graduate is competent to prescribe glasses, and, therefore, they feel it their duty, in the interest of the public, to warn people against the very great danger of wearing any pair of glasses not prescribed by an oculist, and they lose no opportunity to give opticians a 'black eye.'"

I quote rather freely as the attitude of the retailers of spectacles and optical goods is of special interest at present to the ophthalmologists of this country. The book is worth reading for the ophthalmic surgeon and though primarily intended for the tradesman, will tend to elevate the latter's calling if his mental capacity be sufficient to digest its contents. The volume is well printed and contains a number of diagrams and other illustrations. H. V. W.

#### **RECORD BOOK OF OPTOMETRIC EXAMINATIONS.**

A Concise Record of Examinations Made and Glasses Prescribed and Furnished, The Keystone, Philadelphia. Price.

This is a complete record book for the use of opticians or for those ophthalmologists who care to complicate their records by an additional book for this purpose. One page is allowed each customer.

H. V. W.

#### **REPORT OF THE STOCKHOLM EYE CLINIC.**

Mitteilungen aus der Augenklinik des Carolinischen Medico-Chirurgischen Institutes zu Stockholm. Herausgegeben von Dr. J. Widmark, Professor der Augenheilkunde. Zweites Heft. Jena. Gustav Fischer, 1899. 4 Marks 50. Large 8 Vo. 110 pp.

This second contribution to German literature, of work done at Stockholm, by Swedish ophthalmologists, is of equal value, though perhaps not of the same striking interest, as the first reviewed in the ANNALS.

There are three essays:

(1) Holocain and its effect upon corneal epithelium and the repair of corneal wounds.

(2) A case of tumor of the iris.

(3) A study of blindness in Scandinavia and Finnland.

The second essay, by Axel Helleberg, on an iris tumor, is undoubtedly a noteworthy contribution to our pathological knowledge, yet the facts brought out are of more service to the technical pathologist than to the practical eye surgeon. A blow had been received by the patient five years before, and the diagnosis of iris tumor was easy to make. The eye was enucleated and the character of the tumor, which had been in doubt, was, after careful preparation and microscopical examination, revealed to be either a *Leione-goma* or a *Lenkosarcoma*. The details and colored plates are worth study.

The first essay, by Albin Dalén, adds but another to the many good studies of holocain given us by Europe and America but the author has been so painstaking in his work and so novel in his methods that he deserves recognition. He first calls attention to the fact that holocain is a coal tar product allied to phenacetin, while cocain is a vegetable alkaloid, and that the differences in action are thereby accounted for. As far as anesthetic effect is concerned, holocain acts quicker than but not so long as cocain (he refers always to a  $\frac{1}{2}$  — 1% holocain compared with a 4% cocain solutions of the hydrochlorate); holocain is a germicide, as he proves by tests and experiments, and is thus far superior to cocain, especially for office use in slight operations; holocain is very poisonous in the system, and is inferior to cocain; holocain anesthetizes an inflamed mucous membrane or cornea, and is in this case superior to cocain. Holocain is quite as harmful as cocain when continued over the moment in which immediate anesthesia is necessary. This ends the comparison of the mere superficial uses of the drugs. The second part of the essay is decidedly novel in plan, and the conclusions are well worth preserving in the mind of any one practicing on the cornea. Dalén has demonstrated beyond question that holocain injures the cornea as much as does cocain, but in a different way. The loss of superficial epithelium takes place, and if the injury (by the drugs) is not continued, in either case the cornea not harmed, but the continued influence of either drug is quite as disastrous in the one case as in the other, in fact, holocain acts like quinin—a cell poison—deeper and more lasting, producing practically a necrosis. This shows the author that cocain, long continued, is less treacherous than holocain. In the effect upon repair of corneal wounds, Dalén—studying microscopical appearances very carefully, can see no difference between the two drugs, so that in this respect the choice between them is a matter of personal convenience.

The third essay, by Widmark, is fascinating, as is anything from his pen. It gives us at a glance (by means of shaded and numbered charts) the proportion of blind in European countries,

it touches on the history of Sweden, of medicine in general, of trachoma in particular, and is in all respects delightful. I can hardly review it, because there is too much statistical matter, but a few conclusions reached by the author will be of value to ophthalmologists and epidemiologists the world over. For instance, Portugal, the highest (1878), has 20 blind to every 10,000 inhabitants. Finland (1890) 15.5; Sweden (1890) 8.3; Holland (1890), the lowest, 4.4. Of the cases of blindness, trachoma in Denmark is less than 1 per cent., while in Finland it is 30.87 per cent. In fact, Finland has been a home of trachoma long before "the Egyptian Ophthalmology" was ever discovered, as Widmark easily proves by many a classic quotation. The Finns seem peculiarly liable to trachoma, for Finnish immigration into Sweden carries it, and a Finnish colony there may perpetuate the disease which seems to leave the neighbors free. But soil, atmosphere, custom and elevation are determining factors in its life. Women seem more susceptible than men, although this is not at all my own experience.

Denmark has the lowest proportion of blind, among Scandinavian people, because, as Widmark explains, the closely populated territory, flat and offering easy communication, and the spread of ophthalmological practice, has admitted of much earlier treatment than prevails elsewhere.

Other deductions from Widmark's charming essay I must leave to the reader's own investigation. It certainly is a noteworthy effort to spread useful knowledge concerning ophthalmology, its talks and accomplishments. The press work, as one might expect from Fischer's shop, is all that could be desired. A. B. H.

#### COMPEND OF DISEASES OF THE EYE.

A Compend on Diseases of the Eye and Refraction including Treatment and Surgery. By George M. Gould, A. M., M. D., and Walter Pyle, A. M., M. D. Second Edition Revised and Enlarged. One hundred and nine illustrations, several of which are in colors. P. Blakiston's Son & Co., Philadelphia. No. 8 of ? Quiz Compend? 295 pages. Price, 80 cents.

It is wonderful how much can be put into one small book, and this compend seems rather a text-book than a cramming medium, for nearly everything known in ophthalmology is crowded into its pages. In fact, I have not been able to find any one important point which seems to be omitted or too little discussed. The number of plates and their clearness is particularly praiseworthy, and I can find fault with none of them except that of the *orbit*, on page 257, where smallness of dimension obscures anatomic detail. The table on pages 162-3, that on pages 132-3, 4, 5 are valuable and not always to be found in much more pretentious treatises. This edition differs so expressively from the first, that a comparison would be unprofitable, but such recent advocacies as Oliver's optometer (Fig. 42) and Thorington's axonometer (Fig. 21) have not escaped the authors' notice. Thorington himself has written the chapter on retinoscopy, so that the student may be sure of a concise but lucid explanation of a difficult art. Every student in college should possess this compend, and I am glad to say for myself that I have not only

enjoyed but profited by the method by which the ideas are conveyed in its pages.

A few criticisms one might make need have reflection on the value of the book as a manual, but I think that the section "Elementary Optics" is too condensed for true explanations, and obscure in much of its wording. The expression media and medium are used too indefinitely and often interchanged, which is, of course, an error, and the explanation of cardinal points would confuse instead of clarifying the student's ideas.

As one might expect from anything Dr. Gould handled refraction is elaborately discussed, even to details of prescription writing, which is of immense assistance.

The publishers should be congratulated on offering so much excellent matter at such a moderate price. A. B. H.

That this little volume, which has now reached the proportions of a manual, should come to a second edition within two years, is only a fulfillment of our expectations. There is no small book that puts before the student so clearly the method of conducting the different examinations of the eye. Good illustrations are used in profusion to elucidate difficult points generally left obscured in the text of most volumes. Noteworthy stress is laid on the importance of bringing as near to the ideal as may be—all eyes that are much engaged in near work. Some surgeons will differ with the authors as to the desirability of amblyopiatrics, (training the visual faculty of the amblyopic eye), in high grade anisometropia unless there is some prospect of securing comfortable binocular vision; and at one or two other unimportant points, slight differences of opinion might obtain, but all careful workers will welcome the second coming of a book that presents to the student only the best ideas in our science.

The teaching as to diseases of the eye and their treatment is practical and sound throughout, and the description of the ordinary ophthalmic operations unusually good. The chapter on local therapeutics, which includes all the recent mydriatics, miotics, local anesthetics, ocular antiseptics, etc., is a thoroughly up-to-date collection of notes and formulæ for the student. The whole book has been set in larger type, and several illustrations, including five colored plates, have been added. As a beginner's volume there is nothing better in the language. W. R.

#### PROGRESSIVE MEDICINE.

HOBART, EMORY HARE, editor, Philadelphia. (A Quarterly Digest of Advances, Discoveries and Improvements in Medical and Surgical Sciences. Lea Bros. & Co., Philadelphia).

Vol. III, of above publication, has just appeared from the press containing articles on diseases of the thorax and its viscera, including the heart, lungs and blood-vessels; diseases of the skin, diseases of the nervous system and obstetrics. The contributors to this volume are: William Ewart, Richard C. Norris, William G. Spiller and Henry W. Stelwagon.



Among the recent advances in physical diagnosis of diseases of the thorax is the use of the Röntgen rays, the results of recent experiments, promising a valuable addition to diagnostic aids in the use of radioscopy and radiography.

An interesting case of hereditary ptosis is cited in which there appeared a bilateral ptosis in one family, through four successive generations.

Among the advances in diagnosis of cerebral tumors is the report of a number of cases by Schmidt in which the growth was situated in one cerebellar lobe and considerable vomiting, vertigo, ringing in the ears when the patient laid upon the opposite side of the body he believed that the aqueduct of Sylvius was compressed and that the symptoms were caused in this way. The sign may be of importance in localizing cerebellar tumors.

A case is reported by Jacobsohn, in which a tumor of the inner capsule and one of the cerebellum were found, and optic neuritis, which was present, disappeared before death.

A case of complete cortical blindness observed by Gaupp is reported in which there was restoration of a very small central field, the case showing that the impairment in the sense of orientation need not be proportionate to the impairment of cortical vision. Under head injuries some interesting cases are cited; one reported by Standage in which a man was shot in the head, and the bullet did not fracture the outer table of the skull, but the inner table was pressed upon the dura. A second case, reported by Burritt, an iron ramrod, discharged from a gun, was driven through a boy's head, entering just above the center of the left eyebrow and leaving the head at the centre of the left parietal eminence. The boy was afterward said to be in perfect health, had perfect use of his arm and speech not impaired.

Vol. I and II of *Progressive Medicine* were favorably reviewed by H. V. Würdemann in July *ANNALS OF OPHTHALMOLOGY* of this year.

WILLIAM R. MURRAY.











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